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ABSTRACT

This manual, in notebook form, is a compilation of lesson plans, activities, resources, and environmental ideas for teachers of kindergarten through 12th grade. In response to teachers' requests, the manual includes worksheets, diagrams, poems, classroom games, and activities presented in 17 sections labeled A through P. The sections cover: (1) a rationale for environmental education (EE); (2) guidelines, concepts, and instructional objectives for EE; (3) activities to build environmental awareness; (4) a life style action calendar; (5) environmental word games; (6) ideas for environmental bulletin boards; (7) information about the teachers and EE activists network; (8) a list of colleges and universities with outstanding EE programs; (9) information about careers in the environment; (10) hints and information about environmental protection; (11) references, bibliographies, and resources lists; (12) Sierra Club Issue Committee information and resources for teachers; (13) exemplary pledges, creeds, and covenants for EE; (14) quotes about Earth literacy, environmental ethics, and a philosophical approach to planet Earth; (15) new trends for EE; (16) the March 1991, October 1991, and January 1992 issues of the Sierra Club newsletter "SierraEcology"; and (17) a glossary of 68 terms. (MDH)

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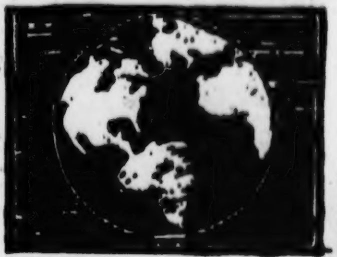
The TEAM Notebook



Teachers' Environmental Action Manual

Joan Rosner, Editor and Senior Writer
Lonnie Ann Fredman, Assistant Editor

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SIERRA CLUB

An Environmental Resource Notebook for Teachers and Youth Leaders

SIERRA CLUB NATIONAL EDUCATION COMMITTEE
1993

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FOREWORD

The TEAM Notebook has been prepared in reponse to requests from hundreds of teachers and youth leaders for environmental education ideas, classroom activities, information, and resources. We hope that many of those who read it will find the material they are looking for, and that they can use this book as a springboard for developing lessons and programs which will suit their special needs. We also hope that it will provide the basis for a nationwide network of teachers who recognize the importance of instilling environmental literacy in their students, and who are eager to share their ideas and experiences with their colleagues.

The notebook format was adopted to permit flexibility both in adding and deleting pages. We will attempt to provide updated material on an annual basis, and expect that as our readers make increasing use of this Manual, they will form the habit of sending in lesson plans, bulletin board ideas, book reviews, reports on projects and other ideas which can have broad based use.

It should be noted that this book's suggested ideas are only samples of extensive available material. The sections which follow offer only a partial collection of the many resources, the wealth of information, and classroom activities which already exist. Useful lists of informative guides and source materials can be found in section K.

—Sierra Club National Environmental Education Committee

"In our every deliberation, we must consider the impact
of our decisions on the next seven generations."
—The Great Law of Peace, Six Nations
Iroquois Confederacy, late 16th century

"A sustainable society is one that satisfies its needs without
diminishing the prospects of future generations."
—Lester Brown, *Worldwatch Report*
April/May 1990

ACKNOWLEDGEMENTS

Editor and Senior Writer: **Joan Rosner**

Assistant Editor: **Lonni Ann Fredman**

The TEAM Notebook is a Sierra Club publication written and compiled by the Club's National Environmental Education Committee:

Harry Betros, Judy Fink, Hy Rosner, Joan Rosner (Chairperson), Betty Sims, Pat Suiter, Frans Verhaggen, Bob Vlahakis, Jan Wolanin, Michele Perrault (Board Liaison).

The contributions and assistance of the following people are greatly appreciated:

Harvard Ayers, Jill Boone, Doris Cellarius, Lonni Ann Fredman, Colleen Hassett, Jerry Hearn, Julie Lowins, Debra Orben, Joe Rolands, Steve Robbins, Shirley Taylor, Robert Warrick, Richard Wilke, and the Sierra Club Population Committee.

Thanks to Francine Robinson, Chairperson of the Environmental Education Committee of the Florida Sierra Club's Suwannee St. Johns Group. The final production she and her committee did contributed significantly to the book. We also want to extend our appreciation to that group for their Centennial Year Project: a gift of this book to each of the 263 schools in the 15 counties of the Suwannee St. Johns Group.

Teachers! We need your response...

SIERRA CLUB NATIONAL ENVIRONMENTAL EDUCATION COMMITTEE
4300 SUNNINGDALE, N.E. - ALBUQUERQUE, NM 87110
(505) 265-6346

Dear Fellow Educators:

Please note that supplements will be added to this version of The TEAM Notebook as the need arises. You can help us provide this service by filling out the notification form you will find on the following page.

We would be most appreciative of your feedback since the supplements will be based on the material and comments that we receive from teachers. The questionnaire on the next page was devised to help guide you in providing the information we need. It is your input that will enable us to publish a notebook of continuing value for teachers Grades K-12 and for youth leaders.

We thank you for completing the enclosed notification form and questionnaire and returning both to the Sierra Club National Environmental Education Committee at the Albuquerque, New Mexico address listed above.

The Sierra Club National Environmental Education Committee, made up of volunteer educators, is dedicated to promoting a greater level of environmental education in our schools and communities. If you would like more information about the committee, or to receive the committee's quarterly newsletter Sierraecology, please contact:

Sierra Club Public Information
730 Polk St.
San Francisco, CA 94109
(415) 776-2211

6

Please provide us with your address if you wish to be notified of future supplements to The TEAM Notebook.

Please notify me of supplements to The TEAM Notebook.

My name:______________________________

My address:____________________________

____

____

Please send this notification form with your completed questionnaire to the Sierra Club National Environmental Education Committee.

QUESTIONNAIRE

Respondent Profile

School level

__ kindergarten
__ elementary school
__ middle school
__ high school

Gender

__ male
__ female

Ethnic composition of student body
(please indicate approximate % of each)

__ African American
__ Anglo
__ Asian American
__ Hispanic
__ Native American
__ other

License

__ early childhood
__ common branches
__ special subject (please specify)__________
____

Teaching experience

__ new teacher
__ 1-5 years
__ 5-10 years
__ more than 10 years

School Location

__ inner city
__ urban
__ suburban
__ rural

OVER

I. Have you felt a need for a notebook of this type?
___yes ___no ___sometimes

II. Please check (✓)the sections you think are valuable for teachers. Double check (✓✓) those sections that you find are especially helpful.

___ Section A Environmental Education: What? Why? How?
___ Section B Environmental Education Guidelines, Concepts, and Instructional Objectives
___ Section C Classroom Activities and Eye-Opener Worksheets
    ___ The Natural Environment
    ___ Students and Their School
    ___ The Community
    ___ Activism
    ___ Arts and Crafts
___ Section D Life Style Action Calendar
___ Section E Environmental Word Games
___ Section F Ideas for Environmental Bulletin Boards
___ Section G Teachers and EE Activists Network
___ Section H Colleges and Universities with Outstanding Environmental Education Programs
___ Section I Careers in the Environment
___ Section J Helpful Hints and Information
___ Section K References, Bibliographies, and Resources
___ Section L Sierra Club Issue Committee Information and Resources for Teachers
___ Section M Pledges, Creeds, and Covenants
___ Section N Earth Literacy, Environmental Ethics, and a Philosophical Approach to Planet Earth
___ Section O Looking to the Future: Trends and Projections
___ Section P Sierraecology

III. Please list any other topics that you think should be included in The TEAM Notebook.

Please list any topics or sections you think should be deleted.

IV. Please specify if you found any of the material confusing or in any way inadequate.

V. In what other ways could The TEAM Notebook be altered to better fill your needs?

VI. Other comments.

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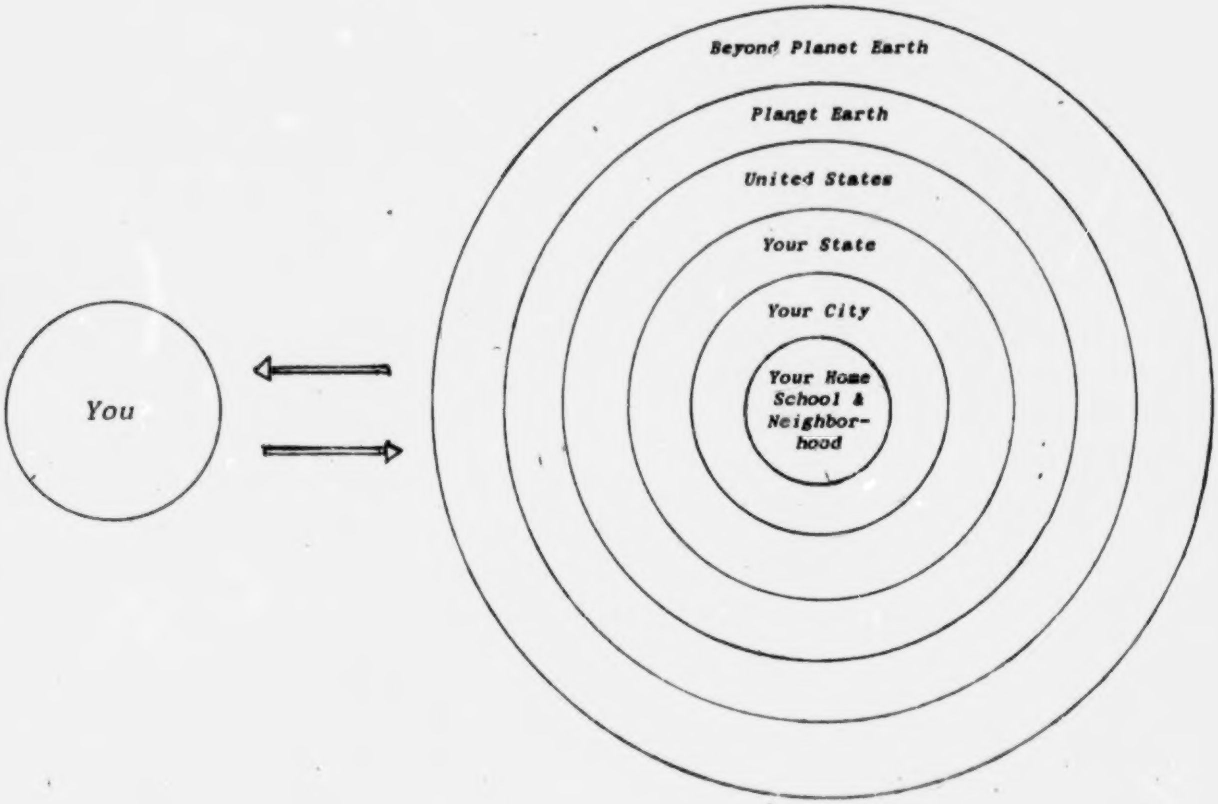
SECTION A

Environmental Education

What?
Why?
How?

YOU AND THE ENVIRONMENTS WITH WHICH YOU INTERACT



WHAT IS ENVIRONMENTAL EDUCATION FOR YOUNG PEOPLE?

Retrospectus

As a topic to be included in the K-12 curriculum of the 90's, environmental education has had a meandering evolution, with its roots in the nature study of the early 20th century. In those days, many elementary school teachers--loving plants, flowers, animals--enjoyed teaching about them descriptively and taxonomically. "Connections" were hinted at when children learned that plants need water, soil, sun and air to grow, or when they were taught about the role insects play in plant fertilization. Emphasis on plants was heightened during the WW II period when Victory Gardens blossomed in many schools.

The tragedies of the Dust Bowl era led to a new dimension in nature study during the 40's and 50's--conservation education. Lessons on soil erosion, contour plowing and rotation of crops were seen in classrooms around the country, from New York City to the western prairies. Interrelationships within ecosystems and the effect of people on nature emerged as topics for examination. At the same time, the term *ecology* was slowly moving from the halls of academia to the world outside. "Everything is connected to everything else" was a pithy phrase which thinking people mulled over and sought to relate to their own understanding of nature and the world around them.

Changes occurred swiftly in the 60's. Nature study became quantified and was referred to as natural science. Classes measured the temperature of soil, the age of trees, the flow of water and the oxygen content of a stream. Ecology, still a word seldom heard outside biology classes, was stealing into lessons, unnamed, when youngsters learned about food chains, webs and pyramids, prey-predator relationships, adaptations and interdependencies. Outdoor education came into its own as school camping, interpretive nature centers and school site trails flourished. And more and more of us asked about the role of people vis-a-vis the natural world.

Earth Day 1970 . . . and Beyond

That question was soon answered when environmentalists, influenced and activated by the social ferment of the late 60's, launched the country's first Earth Day on April 22, 1970. Many were jolted by the realization that the soil erosion problems of the 30's were a modest introduction to the widespread environmental devastation rapidly crashing down on our society. Air pollution had become a health hazard, our important bodies of water were dying, natural resources were used at a rate which could not long continue if they were to avoid depletion, and we were beginning to wade knee deep in solid waste produced by our excessive consumption habits. Environmental education, with its emphasis on these ills, enjoyed a heyday during the early part of the decade, and then slowed down as the backlash to Earth Day's exuberance took its toll.

The 80's were a period of quiescence, even regression. Environmentalism, like many advances in other parts of our lives, was struck down during the Reagan years. Many programs initiated in the early 70's sustained themselves, but others floundered or disappeared for lack of funding. Pockets of hope existed in various parts of the country. Activirts struggled to keep alive the spirit and momentum of Earth Day, with its awareness of our endangered and precious environment. Many environmental educators used this period to evaluate and broaden their understanding of the subject and to add increasingly holistic dimensions such as human ecology and the built environment to their interpretation of the word "environment."

Dramatic messages from scientists came to a frightening peak at the end of the decade, making it impossible to ignore much longer the startling downward spiral in which we found ourselves. The problems of the seventies were national in scope. Those of the nineties were planetary. "Global warming," " depletion of the ozone layer," and "destruction of the rain forest" were terms almost unknown a few years before except by readers of scientific journals. Suddenly they were widespread. And most people were frightened. Earth Day '70 was a festive dress rehearsal for the sober and matured Earth Day '90.

So What Is Environmental Education for Young People in the 90's?

We now find ourselves looking ahead to this last decade of the twentieth century and wondering what advances, or further degradation, will occur. We ask, "What is environmental education for young people in the 90's?" There would probably be as many different answers as respondents, as many definitions as definers. Seeking consensus is a fruitless and unnecessary task. Perhaps, rather than searching for a definition, we might ask what should environmental education be, what should it encompass, what should it hope to accomplish by the turn of the century.

From the perspective of the Sierra Club's National Environmental Education Committee, environmental education should represent the best of both the old and the new thinking on the subject. We now speak of moving toward a sustainable environment, of earth literacy and ethic, of the connection between the environment and the economy--of partnerships between people of good will in both the worlds of environmentalism and business. We also see the relationship between environmental degradation and other forms of societal ills--overpopulation, hunger, poverty, racism, the need for environmental justice, for acceptance of cultural diversity and for worldwide justice and equity. All of these staggering problems are properly occupying the time and attention of policymakers and thinkers who are directly involved with efforts to correct them before time runs out. It is important that environmental education programs address these social issues in addition to the well-known litany of environmental ills.

It is equally important that we also assure the retention for our students of the successful and effective elements of the past. In our rush to "save the earth," we may tend to bypass a fundamental ingredient which many of us consider basic to any program in environmental education, especially for young children--developing a love for and appreciation of the earth. Rachel Carson, in A Sense of Wonder, said it for us:

> "I sincerely believe that for the child, and for the parent seeking to guide him, it is not half so important to know as to feel. If facts are the seeds which later produce knowledge and wisdom, then the emotions and impressions of the senses are the fertile soil in which the seeds must grow. The years of early childhood are the time to prepare the soil. Once the emotions have been aroused--a sense of the beautiful, the excitement of the new and the unknown, a feeling of sympathy, pity, admiration or love--then we wish for knowledge about the object of our emotional response. Once found it has lasting meaning. It is more important to pave the way for the child to want to know than to put him on a diet of facts he is not ready to assimilate."

Unquestionably, as we move into the information-centered 21st century, we must incorporate into the environmental education curriculum the benefits of computer age technology. But, the data-based emphasis of these techniques must be tempered and humanized by direct, positive experiences with nature. Programs which take children outdoors, which heighten their sense of wonder and introduce them to the joys of the natural world, and which enable them to experience first hand how everything is connected to everything else, must be continued and expanded. Environmental programs which focus on the negatives, on the facts and figures of pollution, on fear, can be too harsh for youngsters. They can be counter-productive, leading, for some, to a feeling of hopelessness and early burnout.

Whatever the content of a program in environmental education, it should be broadly holistic, multidisciplinary and interdisciplinary, containing elements which encompass and interpret all aspects of our surroundings and how they interact. Too often, environmental education is assumed to be part of the science curriculum alone. It is imperative that students of the social sciences have environmental concepts infused in their curricula, and that, conversely, scientists have an opportunity to see environmental problems as they relate to economics, political science and human concerns. If one of the goals of environmental education is to produce an environmentally literate citizenry, these concepts must be woven into the entire curriculum.

Effective programs should build an awareness and an appreciation of the natural world we are striving to protect, as well as of the specific hazards threatening the world. These programs should also provide the knowledge on which sound judgments can be based, and the skills to do the critical thinking and problem solving necessary if our society is to work its way out of the morass in which we now find ourselves. Students should not be told what to think in regard to these complex issues confronting us, but rather what to think about and how to think constructively and critically.

The ultimate goal of successful EE programs is to foster a valuing approach and responsible action both individually through modified attitudes and life styles, and collectively through community action and political process. Taught to recognize that they are part of an interdependent human and natural web, students can emerge as a new generation educated to question prevalent attitudes and values, to seek a balance between the lifestyle our society takes for granted and an ecologically sound environment, to protect and respect diversity wherever it occurs in natural and human communities, to live in conformity with an ethic which sees people as part of the natural world--not its masters--and to care so much about the world they have inherited that they are willing to work together to pass it on to future generations a little better than they found it.

"The Indian view is that man is part of a delicately balanced universe in which all components--all life forms and natural elements--interrelate and interact with no part being more or less important than another. Further, it is believed that only man can upset this balance."

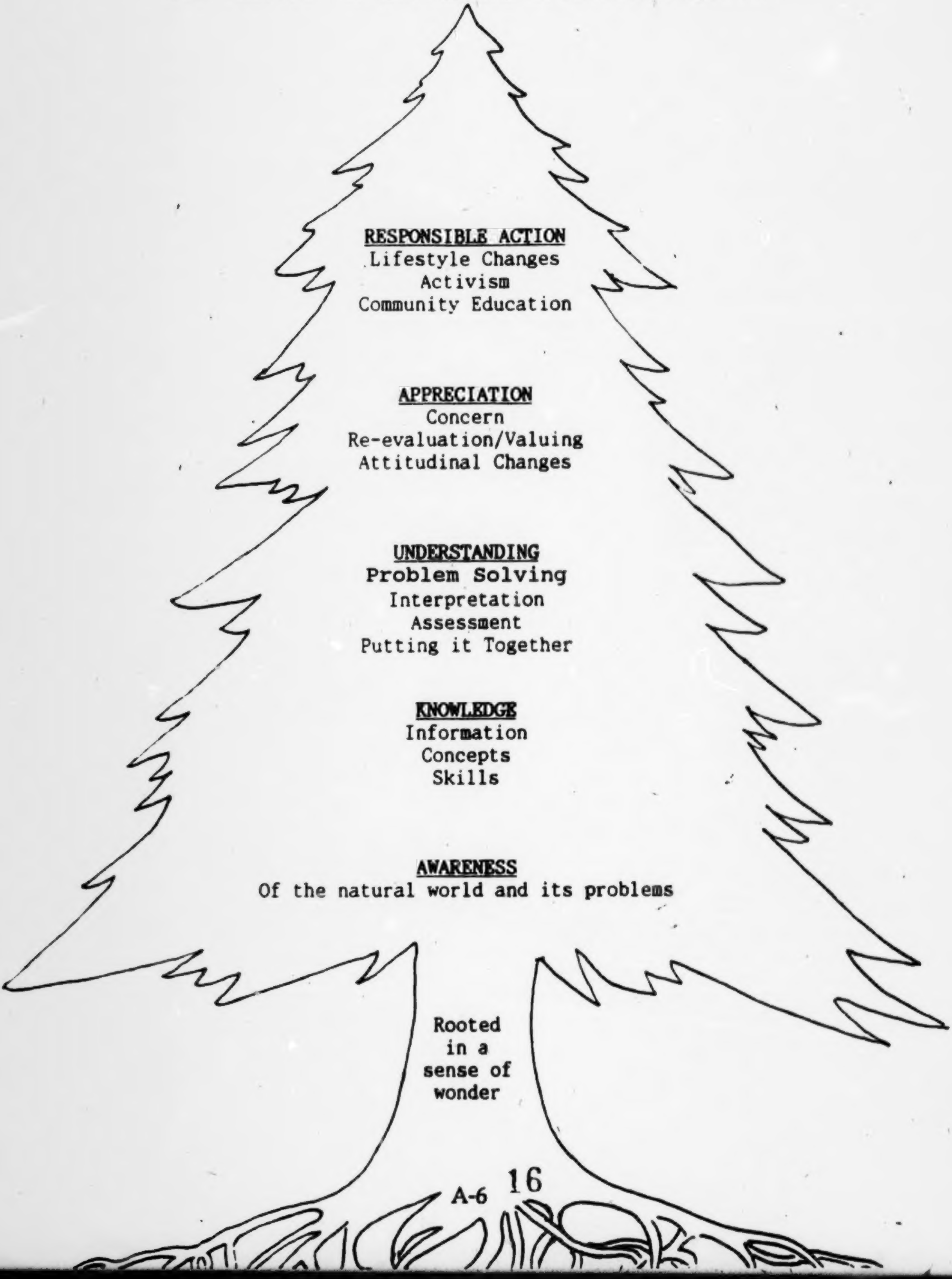
Tom Bahti

"Thou canst not stir a flower without troubling a star."

Francis Thompson

ENVIRONMENTAL EDUCATION OBJECTIVES "TREE"

WE CAN HELP THE ENVIRONMENT BY "PLANTING" THIS TREE THROUGHOUT OUR SCHOOLS' ENVIRONMENTAL EDUCATION PROGRAMS



RESPONSIBLE ACTION
Lifestyle Changes
Activism
Community Education

APPRECIATION
Concern
Re-evaluation/Valuing
Attitudinal Changes

UNDERSTANDING
Problem Solving
Interpretation
Assessment
Putting it Together

KNOWLEDGE
Information
Concepts
Skills

AWARENESS
Of the natural world and its problems

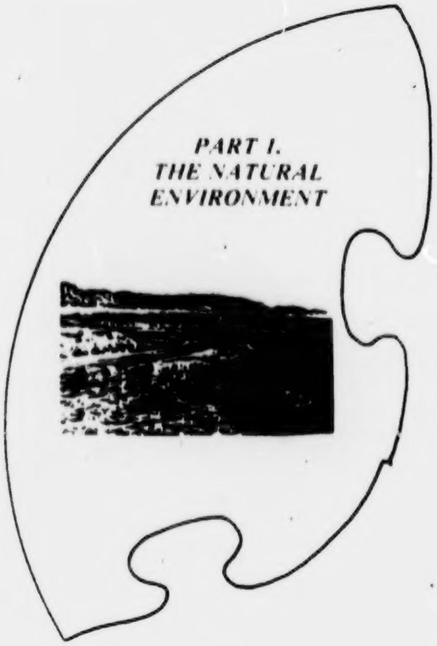
Rooted in a sense of wonder

THE HOME, SCHOOL, AND NEIGHBORHOOD AS A MINI-ENVIRONMENT--A CITY IN MINIATURE

Your home, its surroundings, and your neighborhood with its people form a small ecosystem which resembles a city in miniature. The systems of rules, paths, wires, and pipes regulating the flow of people, energy, goods, and wastes reflect those of the larger community to which you belong.

Looking at the interrelationships in this mini-environment can lead to many interesting discoveries about aspects of your life you may have taken for granted. It may also help to interpret the workings of a system as complex as your city and the natural areas around it.

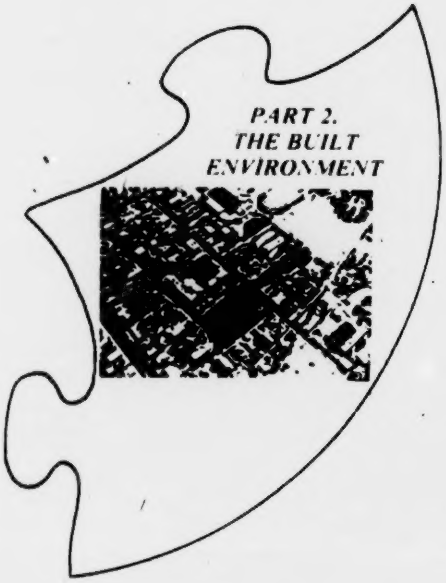
In both your immediate surroundings and the world beyond, the foundation of the ecosystem is the natural environment--a piece of land, the plants and animals adapted to live on it, and the life support systems which sustain these living things. They provide the natural base for roads, houses, schools, and other buildings. Finally, people with needs, wants, and social structures are added, forming an ecosystem which interacts and interlocks, like pieces of a jigsaw puzzle, and creates a closely meshed entity.



The plants and animals in yards and vacant lots, as well as the people in your home, school, and neighborhood, are affected by the physical elements of their immediate environment.

In turn,

the use people make of the grounds and of the physical factors in their surroundings affects the larger environment beyond the home, school, and neighborhood.

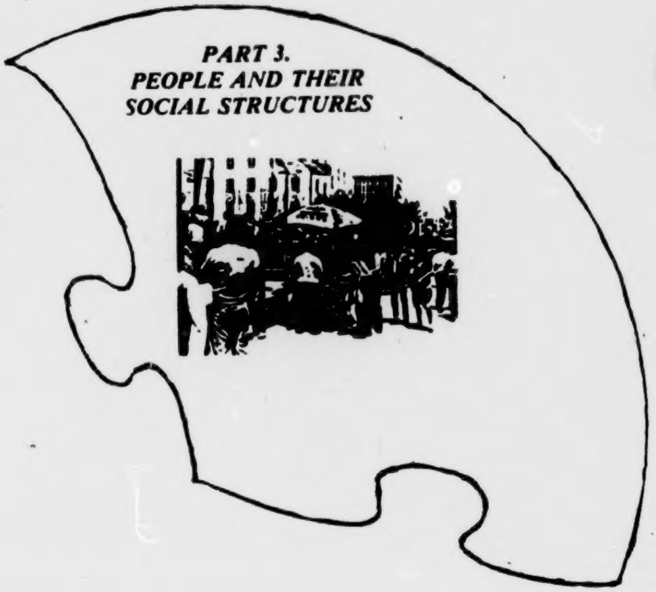


Houses, schools, and other structures in the neighborhood are built with materials from the earth. Heat, electricity, food, water, and other supplies are brought into these buildings to support the occupants.

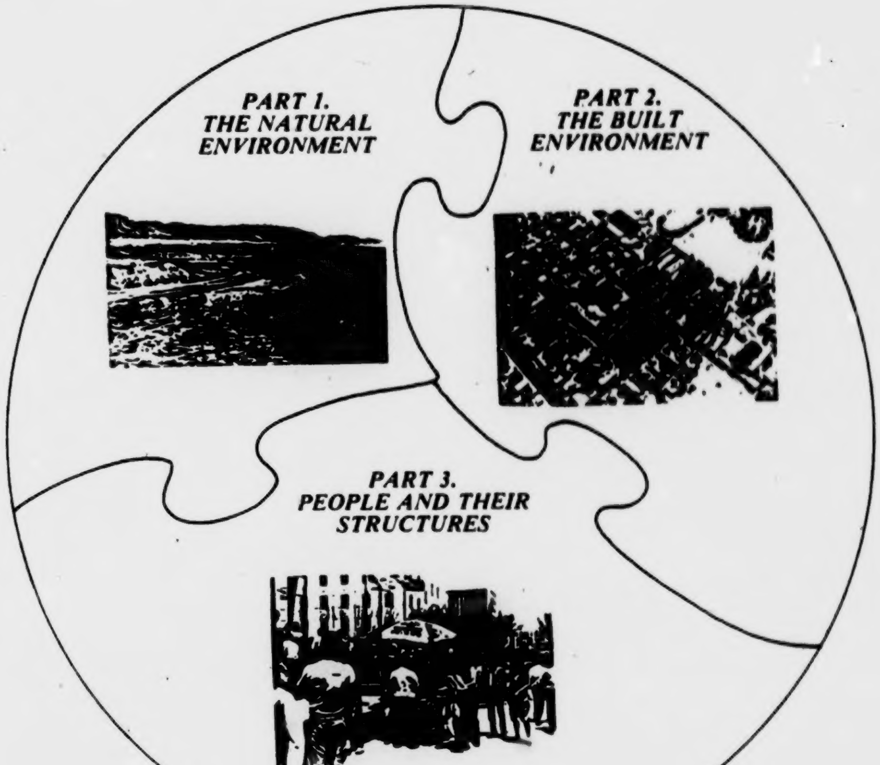
In turn,

the buildings affect the quality of the larger community's environment by their design, by the demands made on energy and material resources, and by the wastes they generate.

The people in your home, schools, and neighborhoods are individuals who have distinctive needs, wants, and inner environments. They interact and form communities, functioning as social entities which have special roles, internal organization, government, and decision making capabilities. In the process, aesthetically pleasing, clean environments and cooperatively functioning social organizations may develop. In turn the larger community is affected by the attitudes, demands and actions of people in the homes, schools, and neighborhoods.



THE ECOLOGICAL WHOLE



SOME ORGANIZATIONAL SYSTEMS FOR STUDYING THE ENVIRONMENT

The term environment means "everything around us," obviously, an overwhelmingly large body of knowledge. In an attempt to cope with such a comprehensive topic, various environmental educators have developed organizational systems which enable teachers and students to perceive relationships and integrate their findings. Several of these schematics or categorizing methods have been drawn upon in the preparation of this book. All have strengths and weaknesses. Use of any one of them is a matter of individual preference. Several are described below.

STRANDS--The National Environmental Education Development Program (NEED), National Park System

- **Variety and Similarities.** A variety of functions, sizes, and structures exist in plants, and stars, rocks and animals, processes and people. Yet there are sufficient similarities to permit their classification into orderly patterns.
- **Patterns.** Organizational patterns . . . may be found in rock formations as well as in social groups of animals or people. Functional patterns include traffic movement and classroom schedules. Spatial arrangements are patterns that often please us.
- **Interaction and Interdependence.** Nothing exists in isolation. Each individual is constantly interacting with living and nonliving things. The process is continuous as part of the life cycle.
- **Continuity and Change.** Both living and nonliving things are constantly changing. Some things remain the same in spite of change. Matter and energy may change in form but they can never be created or destroyed.
- **Evolution and Adaptation.** Over centuries and centuries of time, organisms alter and develop in the process called evolution. Probably the greatest number of changes over the longest period of time come about in order to enable an organism to adapt to the environment.

A Systems View of the Environment*

- An environment is a field of fields within fields.
- A field is BIST/Quanta.
- Which are structured in CODES.
- Which are integrated in Systems.
- Which are coordinated in Networks.
- All of which are harmonized by rhythms.
- There is a whole field, which embodies all other fields, and which all other fields embody.
- The whole field does the same thing.
- But each field does it differently.

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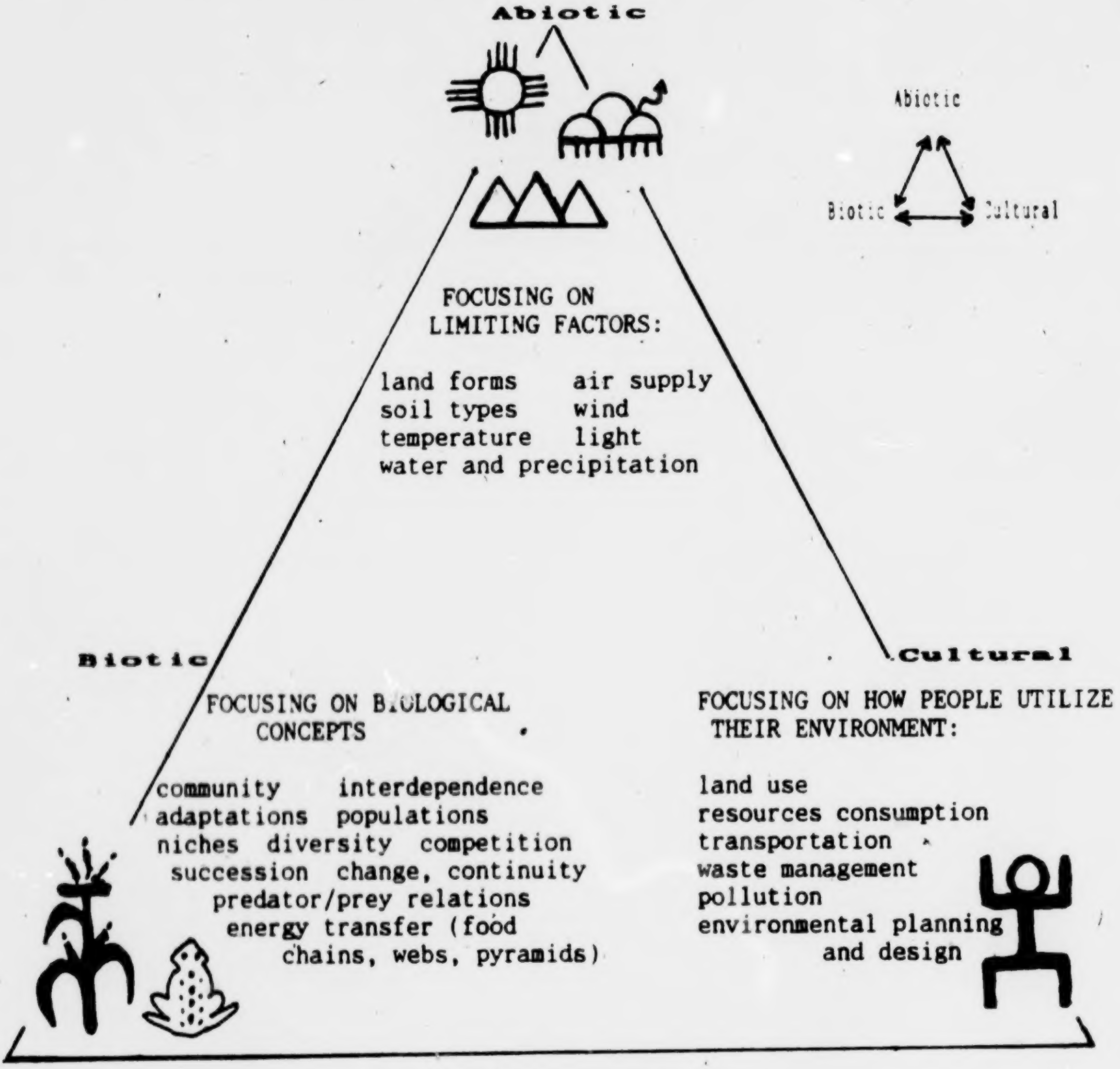
* Center for Curriculum Design
P. O. Box 350
Evanston, IL 60204

A Total Environmental Triangle



Abiotic

FOCUSING ON
LIMITING FACTORS:

land forms
soil types
temperature
water and precipitation
air supply
wind
light

Biotic

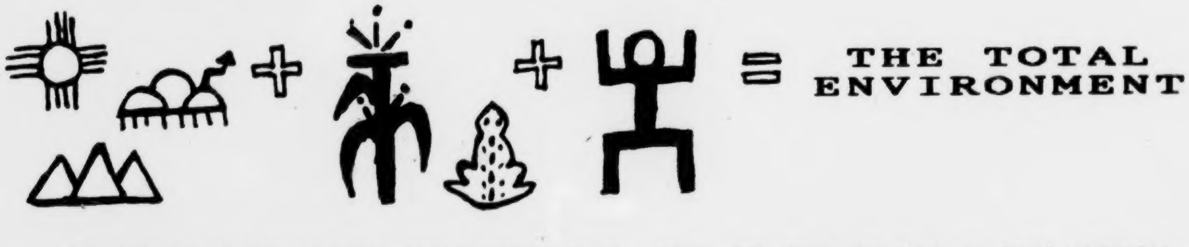
FOCUSING ON BIOLOGICAL
CONCEPTS

community
interdependence
adaptations
populations
niches
diversity
competition
succession
change, continuity
predator/prey relations
energy transfer (food chains, webs, pyramids)

Cultural

FOCUSING ON HOW PEOPLE UTILIZE
THEIR ENVIRONMENT:

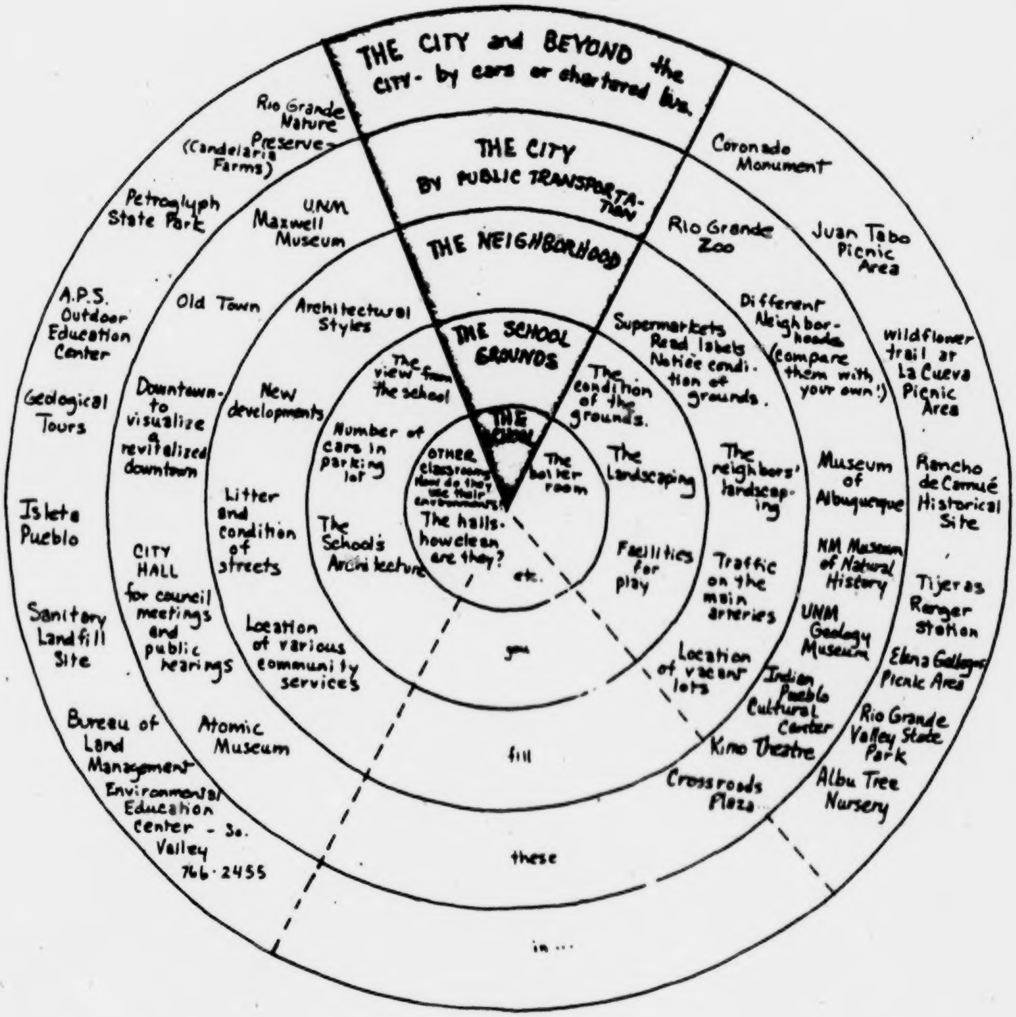
land use
resources consumption
transportation
waste management
pollution
environmental planning and design



Reprinted from *Albuquerque's Environmental Story*. Adapt this chart for your own local community. This schematic was adapted from:

TETE--Total Education-Total Environment
William R. Eblen, P. O. Box 113
Wilton, CT 06897

TAKE A TRIP *The best way to study your environment is to GO SEE*


THE CITY and BEYOND the CITY - by cars or chartered bus.
THE CITY BY PUBLIC TRANSPORTATION
THE NEIGHBORHOOD
THE SCHOOL GROUNDS
THE ROOM
OTHER classrooms How do they use their environments?
The halls - how clean are they?
etc.
The boiler room
The view from the school
Number of cars in parking lot
The School's Architecture
The condition of the grounds.
The Landscaping
Facilities for play
Architectural Styles
New developments
Litter and condition of streets
Location of various community services
Supermarkets Read labels Notice condition of grounds.
The neighbors' landscaping
Traffic on the main arteries
Location of vacant lots
UNM Maxwell Museum
Old Town
Downtown - to visualize a revitalized downtown
CITY HALL for council meetings and public hearings
Atomic Museum
Rio Grande Zoo
Different Neighborhoods (compare them with your own!)
Museum of Albuquerque
NM Museum of Natural History
UNM Geology Museum
Indian Pueblo Cultural Center
Kimo Theatre
Crossroads Plaza
Rio Grande Nature Preserve (Candelaria Farms)
Petroglyph State Park
A.P.S. Outdoor Education Center
Geological Tours
Isleta Pueblo
Sanitary Landfill Site
Bureau of Land Management
Environmental Education Center - So. Valley 766-2455
Coronado Monument
Juan Tabo Picnic Area
Wildflower trail at La Cueva Picnic Area
Rancho de Carnué Historical Site
Tijeras Ranger Station
Elena Gallegos Picnic Area
Rio Grande Valley State Park
Albu Tree Nursery
you
fill
these
in ...

Reprinted from *Albuquerque's Environmental Story*
Adapt this chart for your own local community.

SECTION B

Environmental Education

Guidelines, Concepts and Instructional Objectives

"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

Aldo Leopold, *Sand County Almanac*

"What children learn through manipulation of the environment is nothing less than the ability to think."

David Elkin

CONCEPTS AND GUIDELINES TO CONSIDER WHEN DEVELOPING AN ENVIRONMENTAL EDUCATION PROGRAM FOR YOUNG PEOPLE

One Related World

- "Everything is connected to everything else."
- We live in a global village. It's a small planet. We need to learn globally while acting locally.
- The planet can't take endless abuse without changing in ways that human beings might not like.
- Individuals and organizations count--and shouldn't be pointed out as "good guys" or "bad guys." It's just not that simple a world. We must be aware of the gray areas between black and white.
- Earth is home to all of us. Share it responsibly.
- All the people of the world, no matter where they might live or how wealthy or poor they are, are in it together insofar as the environment is concerned.

Environmental Literacy

- We should all educate ourselves about local issues and campaigns for change.
- It is important to learn the issues and to understand the different points of view.
- A good quality education prepares students to understand the problems and to participate in finding solutions.

Individual Responsibility

- Individual action, though seemingly small, can have tremendous impact when total participating population is considered.
- We all must realize that we are powerful and no one can take that power away. Power comes from knowledge and action, not from ignoring what is going on.
- It is our own future that is at stake. No one can escape the results of continued irresponsibility.
- It is not "them" who is destroying our natural environment but we ourselves.
- If everyone does a little, a lot can be accomplished.
- All of us, even youngsters, are empowered. We can make decisions. We can change things. We can make our ideas known. We can help to make the world in which we live a better place.
- We all have the responsibility to change the way we live our daily lives so that everyone's life will be better, especially future generations.
- We are all part of, not apart from our environment.

A General Approach to Environmental Education Programs for Children

- Keep the focus on the positive, the solutions, the things that can be done rather than on the depressing negatives.
- Develop an environmental ethic.
- Provide role models--kids can't be made to feel that they have the heavy responsibility for saving the earth.
- Build "fun" into programs. Children should celebrate the joy in our world, not mourn for all the negatives.
- Avoid promoting simplistic, "band-aid" solutions.
- Help children feel empowered, not helpless.

The preceding list was adapted from a consensus of opinions prepared by the Advisory Committee for THEATRE IV's new production for children, *Wonderful World*, a project made possible by a grant from the Virginia Environmental Endowment. The list was printed with the permission of THEATRE IV, a non-profit theater founded in 1975 and located in Richmond, Virginia.

ENVIRONMENTAL UNDERSTANDINGS

Basic Concepts

1....The basic function of any ecosystem is to capture and to transfer energy.
2....The Earth's main source of energy is the sun.
3....Energy is initially supplied to an ecosystem by the activities of green plants.
4....Diversity is a key factor in the survival of an ecosystem.
5....The energy requirements of people are met primarily by "food," and people are dependent upon other organisms through food chains and food webs.
6....Living things are interdependent with one another and with their environment.
7....Any one of an environment's components--such as space, water, food, or energy--may become a limiting factor.
8....Organisms and environments are in constant change.
9....Survival of an organism depends upon its ability to adjust to its environment. Each kind of organism represents a collection of adaptations which fit it for survival under a given set of conditions.
10...The ways in which people change the natural environment can imperil the survival of many species.
11...People adapt to the earth's varying landforms differently.

Natural Resources

12...The material welfare and aspirations of a culture largely determine the use and management of natural resources.
13...Natural resources are interdependent and the use or misuse of one will affect others.
14...Raw materials and energy supplies are generally obtained from those resources available at least cost, with supply and demand determining their economic value.
15...Social, economic, and technological changes affect the interrelationships of quality, availability, and the use of natural resources.
16...As natural resources become more scarce, the inexhaustible supply of human energy, resolve, determination, and ingenuity must be fully utilized.
17...Plant and animal populations can be renewable resources if properly managed.
18...Water is a reusable resource, but the usable quantity may be reduced by impaired quality.
19...Soil, trees, and water are classified as renewable resources, but, because their renewal or revitalization requires a major investment in time and effort, they may be more realistically considered depletable resources.
20...In nature, there is a continuous recycling of many elements.
21...People would do well to observe nature's example and recycle the results of their technology.
22...Most resources are vulnerable to depletion in quantity and quality.
23...The nonrenewable resource base of mineral elements is considered finite and depletion can only be slowed by altered priorities, new demographic considerations, improved conservation practices, and vigorous recycling procedures.
24...The rate of resource consumption increases in direct proportion to the expansion of our wants, needs, and markets.
25...Historically, cultures with high technological development have used disproportionately more natural resources than those with lower levels of technological development.

Environmental Ethic

26...Physical well being is a fundamental necessity for survival even though people often place a higher value on other things.
27...Social values and morals influence environmental attitudes. Humankind is continually developing an ethical base for making value judgments.
28...People have exercised a presumed right to exploit the environment with little regard for their responsibility to preserve it.
29...People currently face the prospect of endangering their chances for a better life through the very measure they employ to achieve it.
30...The demands of population growth coupled with people's tremendous waste of energy are responsible for some of our more serious environmental problems.
31...It is important that individuals become well informed about the best ways to manage and conserve our energy supplies.
32...Choices between essential needs and nonessential desires are often in conflict.
33...Individuals tend to select short-term economic gains, often at the expense of greater long-term environmental benefits.
34...It is the responsibility of each individual to become more aware of existing governmental regulations intended to protect the environment.

ENVIRONMENTAL EDUCATION INSTRUCTIONAL OBJECTIVES

If our goal is to educate students to appreciate the world in which they live and to understand the need for effective participation in the social process which affects its future environment, then the students (according to their age and ability) should be able to:

In General . . .

1....demonstrate a grasp of the principles and generalizations of an ecosystem.
2....define and give examples in both natural and human ecosystems of the following terms: interrelationship; adaptation; succession; scarcity; survival; diversity; recycling.
3....differentiate between renewable and nonrenewable resources in danger of depletion or extinction.
4....categorize the world's resources as renewable and nonrenewable.
5....identify some renewable and nonrenewable resources in danger of depletion or extinction.
6....identify and assess the impact of technology on the environment.
7....critically examine the ecological implications of technological "advances" before endorsing them.
8....relate consumption habits to resource depletion.
9....recognize and describe the limits of the earth's energy resources.
10...list and describe present and alternate sources of energy.
11...make informed judgments on energy sources in terms of environmental impact.
12...record, document, and report observation of environmental issues.
13...show that the natural world and human society are in a state of constant change; cite examples of such change.
14...cite ways in which the people and their physical environment are interrelated.
15...explain how the physical factors in a community could influence its cultural history.
16...explain how a community's cultural history could influence factors in its physical environment.
17...contrast the impact upon a community's environment by peoples of other times with that of today.
18...analyze the problems affecting a community's environment.
19...list some of their community's most serious environmental problems.
20...design and test hypotheses to explain environmental problems in their community.
21...relate data from other disciplines to the subject area in which the environmental problem is studied.
22...design a problem solving approach to one of their community's environmental issues.
23.. demonstrate an awareness of environmental problems facing the city by recognizing such in the community and by reacting to news items.

General ENVIRONMENTAL EDUCATION UNDERSTANDINGS AND INSTRUCTIONAL OBJECTIVES nos. 1-23 were reprinted with permission from *Albuquerque's Environmental Story*. They were adapted from *Designing an Environmental Curriculum--A Process*, New York State Education Department, Albany, NY. 1975.

Specifically . . .

(The following specific environmental education understanding and instructional objectives are based on "Environmental Issues in Sierra Club's 1991-1992 National Conservation Campaigns.")

Agriculture

- **Cite 5 ways in which growing animals for consumption affects the environment.**
- Describe how soil erosion hurts food productivity.
- List five points to remember in the care of farm animals.

Air

- List three ways in which acid rain hurts the environment.
- Cite five ways each in which individuals can help (a) prevent global warming; (b) prevent further depletion of the ozone layer; (c) eliminate smog.
- Name at least six ways in which air pollution caused by the automobile could be reduced.

Energy

- Describe the principle ways in which energy is produced.
- List 5 ways that consumption of energy could be reduced.
- Cite some alternative means of producing energy that are in use today.

Hazardous Materials

- Describe how hazardous materials, including toxic wastes, can harm individual organisms.
- Name three ways in which hazardous materials are harmful to the local community's environment.
- Cite five examples of ways in which alternative methods and substances can be substituted in the home for hazardous materials usually used.

International

- * Describe the different characteristics of 'have' and 'have not" nations.
- * List the staple foods of 6 non-European countries.
- * Describe how free trade might affect the global environment.

Solid Waste

- * Differentiate between "reuse", "recover" and "recycle".
- * List 5 ways individuals can help lessen the solid waste problem.
- * Describe and explain the use of: composting, cogeneration, compacting, resource recovery.

Water Resources

- * Describe the water cycle.
- * Trace the route of drinking water in the community from the source to the faucet.
- * List 5 ways in which water quality may become impaired.

Wetlands

- * Define 3 types of wetlands.
- * List 5 ways in which wetlands are important to wildlife.
- * Cite 4 threats to the continued existence of wetlands in the U.S.

Wildlife

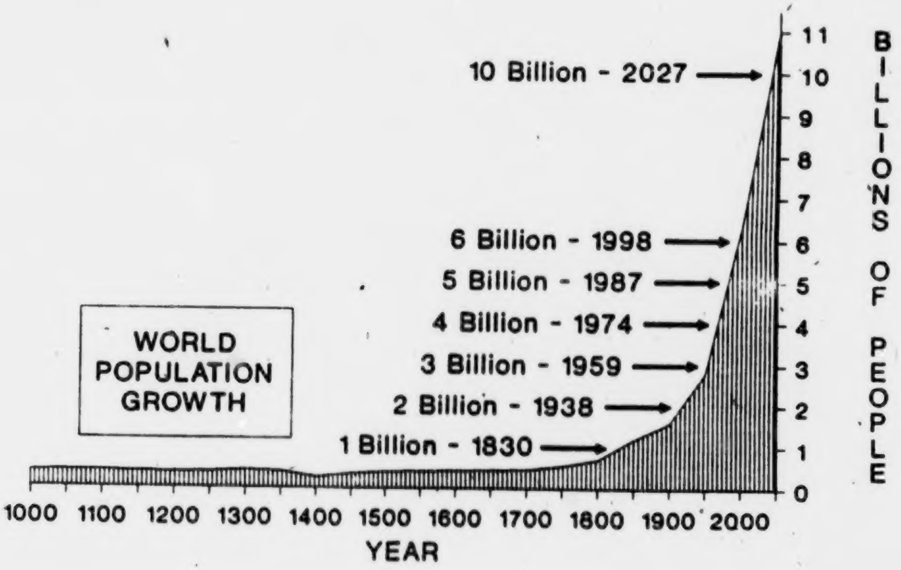
- * Define the terms "threatened" and "endangered" as they pertain to wildlife.
- * Name 7 animals that are on the verge of extinction or have become extinct during your lifetime.
- * Cite 5 ways in which humans have affected wildlife in either positive or negative ways.

Native American

- List four tribes of Native Americans from different areas in the country.
- Describe when and where Native Americans first came to America.
- Explain how Native Americans work with nature.

Population

- Use the "World Population Growth" chart below to tell the present population and the projected populations for the years 2000 and 2040.
- Cite three environmental problems which occurred during the past 50 years of rapid population growth.
- Cite three problems that countries with the most dramatic population growth are suffering.



SECTION C

Classroom Activities and Eye-Opener Worksheets

ENVIRONMENTAL EDUCATION LESSONS AND ACTIVITIES

Since few states have environmental education curriculum syllabi, teachers are frequently at a loss for interesting, effective ways of teaching about the environment and the need for preserving it. There are several excellent books and resource manuals on the subject which are readily available but may not have come to every teacher's attention. Some of the especially useful ones can be found in this Manual's Section K.

For the convenience of readers of *The TEAM Notebook*, we are including in this section a sampling of activities, lessons, and "Eyeopener Worksheets." Some of them were distributed by the Sierra Club Environmental Education Committee before Earth Day '90 in a packet called *Local Solutions to Global Pollutions*. Most of the material in that packet and in Section C, unless otherwise indicated, are reprinted with permission from *Albuquerque's Environmental Story* or *The Dade County Environmental Story*. It should be noted that most of the major global problems are directly related to our personal lifestyles and consumption habits. Whether we think about destruction of the rain forests, depletion of the ozone layer, offshore drilling and oil spills, global warming, the disappearance of the ancient forests in our Northwest, or acid rain, we can not hope for a substantial reversal of the negative trend until our insatiable appetite for energy and "things" has been modified. Classroom activities designed to help students understand themselves in relationship to local environmental problems, such as toxic dumps and habitat destruction, should be easily redirected to global problems. The reminder to "think globally but act locally" is fundamental to this book.

In addition to changes in attitudes and lifestyle, students should be led to understand the need for their becoming active, caring and responsible citizens. Toward this end, several pages of "Activism Activities" have been included. Children from the earliest grades on can be "activists." When they are very young, they can carry their messages to other classes and to their parents. High school, mid-school and, even, older elementary school youngsters can speak out to the larger community and to public officials. Usually, if they present well researched and balanced opinions, their voices will be given better attention than those of adults.

The Sierra Club Environmental Education Committee believes, as was stated in Section A, that children must learn to enjoy and cherish the natural world if they are to grow to care enough about it to work for its preservation. With that in mind, Section C begins with a selection of activities related to the world of nature, the ecological webs to be found there, and suggests the joy in store for those who take the time to explore its secrets.

THE NATURAL ENVIRONMENT

Take a field trip to a nearby woodland or mountain area, pond, beach, tidal pond, marsh, or some other natural area. Local parks, and even the school grounds can be used successfully.

1. Go off in small teams to see who can find the most animals or animal signs (tracks, homes, scat, cocoons, galls, leaf miners, burrows, nests, sounds, etc.)

2. Sit quietly and listen. What sounds can be heard?

3. Do "trust" walks with a buddy. Take turns being blindfolded. Compare experiences.

4. Spend fifteen minutes in a "privacy" spot just feeling, thinking, writing, drawing, or in some other way responding to the joy of the natural setting.

5. Examine a rotting log or a pile of leaf litter. Look for decomposers. Notice how the "waste disposal system" works in the natural world.

6. Trees, always a subject of great interest and pleasure for those who love the outdoors, have acquired a new importance in a world threatened by the "greenhouse effect" and the destruction of forests. Use the trees in the place you are studying to learn more about this very special type of plant.

   - In what ways are all trees similar? What are six ways in which trees differ from each other?
   - Name 5 ways in which trees help their environment.
   - Draw a tree. Put on one leaf for each tree product you can think of.
   - Trees are sometimes referred to as "communities." What other plants and animals use a tree as their "community"? Draw a tree showing some other living things in that community.
   - Select a tree as "Your Tree." Draw a picture of it. Make a leaf print, a bark print. Draw a picture of its seeds, flowers, leaf scars. How tall is it? Can you think of a way of using its shadow to measure its height? Play "20 Questions" with your classmates to try to guess each other's trees.
   - Have children work in small groups to set up their own classification system for 10-15 different kinds of leaves. Then let them "paint" leaves on T-shirts or a big sheet. To paint, use a sponge to apply fabric paint, then press down with a towel.

7. "Catch" and examine little critters with a hand lens or magnifying box. Notice their appearance, behavior, and adaptations. Use the following key to identify some of the little animals found.

A Key to Some Common Soil Creatures

1. Is the creature bigger than this ? Yes..........go to.....3
No...........go to.....2

2. Does it jump? Yes..........it is a Springtail
No...........it is a Mite

3. Does it have legs? Yes..........go to.....4
No...........go to.....7

4. Is it six legged? Yes..........go to.....5
More than six..........go to.....9

5. Does it have wings? Yes..........it is a Beetle
No...........go to.....6

6. Is the body clearly three-parted, or is it cylindrical? 3-parted.....it is an Ant
Cylindrical..it is a Beetle Grub

7. Does it have a shell? Yes..........it is a Snail
No...........go to.....8

8. Does it have eyestalks? Yes..........it is a Slug
No...........it is an Earthworm

9. Does it have eight legs? Yes..........it is a Spider or a Grandaddy Long-Legs
More than eight legs..........go to....10

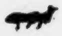
10. Does it have an oval body? Yes..........it is a Sow Bug
Elongated body..........go to....11

11. Does it have two legs or four legs on each body section? Two..........it is a Centipede
Four.........it is a Millipede

springtail

mite

beetle


ant

beetle grub

snail

slug

earthworm

spider

grand-daddy long legs

sow bug

centipede

millipede

Developed by Marty Silver, Park Ranger-Naturalist, Warriors Path State Park, TN, 1987.

8. Using string circles, "capture" an environment. Repeat in a variety of areas (lawn, eroded soil, vacant lot, etc.). What communities do you see? What organisms are the food producers? the primary consumers? the secondary consumers? the decomposers? What organisms are more numerous, primary or secondary consumers? Why? How many circles might it take to support an insect? a bird? a rodent? a large herbivore? a large predator? How many life supporting systems can you see function-

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ing (food production, storage, waste disposal, water, etc.)? If you were to try to diagram these systems, would it be better to use a vertical flow chart or a web of interrelated circles? Why?

9. Select an environment outside, imagining yourself to be variously the size of a lizard, an ant, and a dog. Working in small groups, try to figure out how you might survive in that environment.

   - What kinds of shelters might you have? Tools? Clothing? Food? Modes of transportation?

10. Think about the five "STRANDS" in the National Park Services' system for studying the environment (Variety and Similarity; Patterns; Interaction and Interdependence; Continuity and Change; Evolution and Adaptation). Look for examples of each among the plants, animals and abiotic factors in the habitat you are observing. (See Section A.)

11. "Invent" adaptation by designing a creature to replace an actual animal (insect, bird, reptile, mammal) you might find on the grounds near your school or in a nearby vacant lot. Keep in mind food supply, shelter, enemies, mobility. Draw, paint, or fashion in clay or wire sculpture the animal you invented.

    - How does this creature compare with the one it was to replace?
    - Can you design a predator to eat the creature you made?

12. "Invent" adaptation by designing a plant to replace an actual plant found in a vacant lot. Include seed and seed dispersal; water needs; flower; protective devices.

    - What niche (or role) might this plant fill?
    - Would the seed travel by air, water, in birds, or in animal fur?

13. Invent prey-predator relations by designing a predator capable of: digging up roots; catching flying insects; picking up an egg; picking up leaves; eating meat; getting animals from under ground.

    - What kinds of animals might be able to escape from one of the predators you designed?
    - What are some of the defenses they would need to protect them from their predators?

14. Construct a vacant lot food chain using the domestic cat as top consumer.

- How would the chain differ if the cat's prey was, in turn, a mouse, a butterfly, and a lizard?
- How might this chain look if it was drawn as a pyramid of numbers?

15. Inventory the plants in a specified section of the schoolyard or vacant lot.

- Which plants are dominant?
- How are these plants especially well-adapted to the biotic and cultural conditions in the schoolyard?

16. Look for ants on a patch of grass, soil, or sidewalk. How many kinds of ants do you see? How are they different? Examine one ant with a magnifying glass. Describe its appearance. Draw a picture of it. Watch an ant carrying something. Draw a line to show how big it is. Draw another line to show how big its load is. Watch how it moves. Place an obstacle in its way. What does it do? Place food in front of it. What does it do? What happens when more than one ant goes for the food? Look at an ant hill. What is it made of? Pick up several rocks until you find one covering an ant hill.

17. Collect nature's discards (egg shells, feathers, fallen leaves, molted skins, grass clippings, etc.). If possible, obtain permission to set up a compost pile in an out-of-the-way place outside the classroom. Otherwise, make a mini-compost pile in a moist classroom terrarium.

- What changes occur in the materials (appearances, temperature, texture, odor)?
- What causes decay?
- What are the best conditions to bring about decay?
- How can this compost system be used to demonstrate nature's recycling process?

18. Observe one small area outside the school for three days. Record the changes and their causes on a chart.

cause *change*	*seasons*	*weather*	*time*	*oxidation*	*people*	*other*
melting ice						
taller grass						
etc.						

- What changes do you think might occur during the next week . . . few months . . . few years? How do you think this area is different than it was at the beginning of the 20th century; when the early settlers came; when the Native Americans came?

19. In spring or fall, count the number of seeds from a schoolyard tree which have fallen on one square meter of ground around the tree.

- How many square meters are covered by seeds from this tree?
- Approximately how many seeds came from this one tree?

- What would the schoolyard look like if all these seeds germinated? Why does nature provide such large numbers of seeds? Why do so few become trees?
- What is a population explosion? What happens in human communities when there is a population explosion?

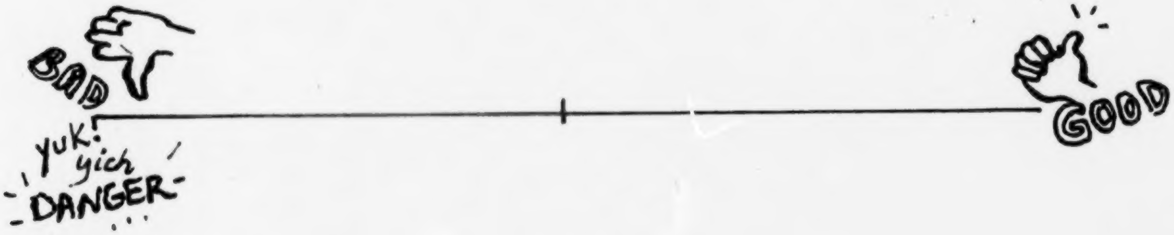
20. Look for "patterns" in the schoolyard (spider webs, flowers, butterflies, caterpillars, soil erosion, rocks). Have each student select a favorite pattern as a basis for designing a textile print.

21. Look at a beautiful tree or a tree-lined street. Elicit "feel" words and list them (majestic, tranquil, towering, graceful, etc.). Have students write haikus or free verse using some of these words to describe their feelings about having trees around them.

22. Set up a values continuum that we, as thinking people, must oppose. Discuss with students that people have a history of thinking of living things as "good" or "bad" for *them*, and then making decisions based on these judgments.

Place on the continuum below the general reputation of the following. Discuss.

rattlesnakes
land snails
roses
tarantulas
coyotes
Christmas trees
ponderosa pine
hummingbirds
mountain lions
cockroaches
rats and mice
red ants
cactus
"stink bugs"
Black Widows



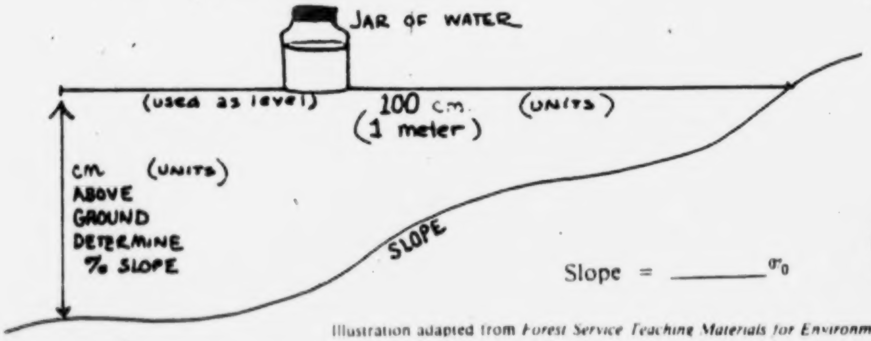
EYE-OPENER WORKSHEET #1--A NEW LOOK AT A VACANT LOT

Start this trip in your classroom. Discuss a vacant lot near your school and try to reach agreement about the points listed below. Record your decisions.

- Is the lot regular or irregular in shape? ______________________________
- Approximately how big is the lot? The size of an average city lot? ______ Half a hectare? ______ One hectare? ______ Other size? ______
- Is the lot sloped? _____ Flat? _____ Partly sloped and partly flat? _____
- Are there any trees on the lot? ______ If so, how many? One? ______ Two? _____ Between two and five? ______ More than five? ______. What kind of trees are they? ______________________________
- How much of the ground is bare soil? Less than 50%? ______ Between 50% and 75%? ______ Between 75% and 100% ______ 100% ______
- Do any animals live in the vacant lot? If so, what kinds? ______________ ______________________________
- In what ways have people affected the vacant lot? Litter? ______ Compacted soil at short cuts? ______ Indirect ways such as gully formation caused by water runoff from nearby paved surfaces? ______ Other ways? __________ ______________________________

Take a trip to the vacant lot to see how close your recollections were to the facts.

- How is the lot shaped? On a separate piece of paper, draw a scale map of the lot. Use a compass to help orient the map properly.
- Measure the perimeter of the vacant lot in meters. ______________________
- Calculate the area in hectares. ______________
- Is the lot sloped, flat, or both sloped and flat? ____________________
- If it is partially sloped, calculate the percentage of slope by using a measuring stick, another stick, and a baby food jar half-filled with water. (See diagram.)



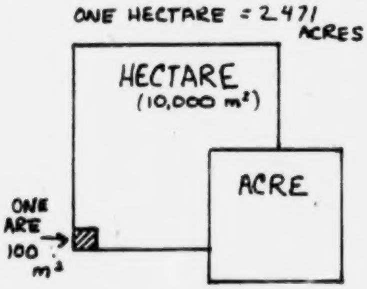
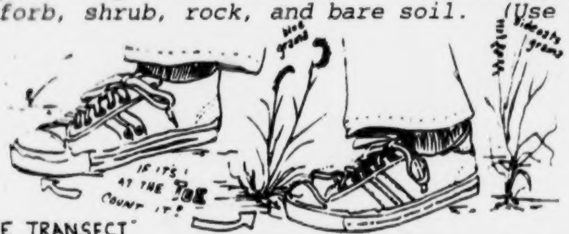


Illustration adapted from *Forest Service Teaching Materials for Environment Education*. July 1973, p. 12.

- How many trees are in the vacant lot? ______ If you know their names, list them below. If you don't, describe them, or make up a suitable name.

Name or Description	*Number*

Divide into groups of three. After each group selects a section of the vacant lot to study, do a 100-step "Toe Transect" (see below) to determine what percentage of the surface is covered by litter, annual grass, perennial grass, forb, shrub, rock, and bare soil. (Use table on the next page).


blue grass
IF IT'S AT THE TOE COUNT IT!

A 'TOE TRANSECT'

Definitions:
litter--plant debris on ground surface
annual grass--lives for a single year and depends on seeds for reproduction
perennial grass--lasts from year to year from the same root base
forb--wildflowers and "weeds"
shrub--persistent woody plant smaller than a tree

Answer the following questions based upon the information recorded in the "Toe Transect" survey.

- Which items had the greatest percentage of coverage? ______________________
  Which had the least? ____
- Did certain plants tend to be associated with certain types of areas such as bare places, rocks, shrubs, etc.? ______ If so, which? ______________ ______________________________________ how might this be explained? ____
- Which of these areas might make the best habitat for animal life? ________ __________________________ Why? ______________________________________
- What kinds of human litter did you find? __________________________________
- Where was most of it? ____

Use hoops made from wire coathangers or hula hoops to do an animal survey. Each group should randomly toss its hoop five times. Examining the area circumscribed by the hoop each time, record your findings as in the example below. Compile the findings of all groups.

		Number of signs					
	Animal signs	*per toss*					*Total for 5*
Animals seen	*seen*	*1*	*2*	*3*	*4*	*5*	*tosses*
ant		8	0	2	10	0	20
	dog's pawprint	0	1	0	1	1	3
etc.							

"Toe Transect" Survey

Working in groups of 4, stretch a 100 foot tape along the ground where you want to inventory the types of plants in your area. This is called a 100 foot transect. Record what you find at every foot along the tape or transect on the table below. Record presence of the item below by putting a check ( ) if present. Leave blank if not present.

Sample Every Foot	Rock	Bare Soil	Litter	Annual Grass	Perennial Grass	Forb	Shrub	Sample Every Foot	Rock	Bare Soil	Litter	Annual Grass	Perennial Grass	Forb	Shrub	Sample Every Foot	Rock	Bare Soil	Litter	Annual Grass	Perennial Grass	Forb	Shrub	Sample Every Foot	Rock	Bare Soil	Litter	Annual Grass	Perennial Grass	Forb	Shrub
1								26								51								76							
2								27								52								77							
3								28								53								78							
4								29								54								79							
5								30								55								80							
6								31								56								81							
7								32								57								82							
8								33								58								83							
9								34								59								84							
10								35								60								85							
11								36								61								86							
12								37								62								87							
13								38								63								88							
14								39								64								89							
15								40								65								90							
16								41								66								91							
17								42								67								92							
18								43								68								93							
19								44								69								94							
20								45								70								95							
21								46								71								96							
22								47								72								97							
23								48								73								98							
24								49								74								99							
25								50								75								100							

Reprinted from *Pocketbook for Environmental Awareness: People & Natural Resources.* Youth Conservation Corps, Washington, Forest Service, United States Department of Agriculture.

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- Did you find animal life in the places you expected to? ______ If not, explain______________________________
- What other signs of animals did you see which did not appear in the hoop sample? ______________________________
- Which animals were most prevalent? ______________ Least?______________ Can you explain why? ______________________________

Worksheet Summary

- In what ways have people affected the vacant lot? ______________________________
- How well did your recollection of the vacant lot compare with your findings? ______________________________
- Name one thing in the lot, or about the lot, that you like the most. ______________________________
- Why do you like it? ______________________________
- Name one thing in the lot, or about the lot, that you like the least. ______________________________
- Why do you dislike it? ______________________________

STUDENTS AND THEIR SCHOOL

EYE-OPENER WORKSHEET #2--WHAT IS YOUR SCHOOL'S IMPACT ON THE ENVIRONMENT?

Arrange with the principal and the engineer/custodian to study the operation and maintenance of the school.

Heating

- What type of heating system is used? ______
  How often is it inspected and serviced? ______
  Is there a more efficient one that could be used? ______
  If so, what prevents your school from using it? ______
- What type of heating fuel is used? ______
  Where does it come from? ______
  How does it get to school? ______
  What, if any, adverse impacts does use of this fuel have on the environment? ______
- Does the school have an air cooling system? ______
  If so, what kind? ______
- Can each room adjust its own thermostat for heating? ______
  For cooling? ______
- Are empty rooms heated? ______ Air cooled? ______
- Does the school have adequate insulation? ______
  Could the doors and windows be caulked to avoid heat loss? ______
- How much energy does your school use per month to heat the building? ______ To cool it? ______ How much money does it cost your school system to heat your school? ______

Lighting

- Can the lights be regulated in each room? ______
- Are the lights left burning in the cafeteria? ______ In the auditorium? ______ In the corridors? ______
- Is natural light sufficient most of the day in some classrooms? (The Department of Energy recommends lighting levels of 50 footcandles at desks; 30 footcandles in rooms and work areas; and 10 footcandles in halls and storerooms.) Use a light meter to determine the amount of light in different parts of your room and school: desks near window ______
  work areas ______ halls ______ cafeteria ______
- What is the wattage of the light bulbs in your classroom? ______
  Calculate the kilowatt hours of electricity used by all of these bulbs in your classroom in a week ______ For the school year ______

After School Hours Use of Heat and Light

- Is the building used between 4 p.m. and 6 a.m.? ______
  If so, how? ______
- How much of the total energy consumed by the school is used after school hours? ______ How can you find out? ______

- How much energy do you think your school wastes in its use of electricity? ______________ What percentage of the total consumption is that? ________% What percentage of heating fuel is wasted? _________% How did you make this determination? ____ What are the adverse environmental impacts of overconsumption of electricity?____

Water

- Make an inventory of all the ways water is used in your school building and on the school grounds, and list on a separate page those used.
- How much water does your school consume in one month?______________________ How much water is that per capita? ___________________________ Is more used some months than others? ___________ If so, which months? ___________ ____________________________ Why?_________________________________
- If your school has a paved parking lot, what impact does that have on the water cycle and water availability? ____ ____

Paper

- List on a separate page all the ways that paper is used in your school.
- Ask the principal, or the teacher in charge of ordering supplies, how much paper is used each year for classroom and office purposes. _______________ ____ Ask the custodian how much paper is used in the cafeteria and for maintenance. ____ Name other paper products that are brought into the school. _______________ ____
- How many times could the exterior of the school building be covered with the paper that is consumed within a month's time?____________________________
- Ask the custodian how much solid waste is generated in the school in a year. ____ What percentage of this solid waste is paper? ____________________________%
- Do a survey to get a variety of opinions about what percentage of the paper thrown away was unnecessary. Ask the principal, the custodian, a few teachers, and several schoolmates. Record their answers.
- Does your school recycle paper? ______
- List all the ways you think paper consumption impacts on the environment. Discuss with class.

SUGGESTED ACTIVITIES RELATED TO EYE-OPENER WORKSHEET #2

1. Compile a list of three ways each that your school could help conserve: (1) energy used for heating and cooling; (2) energy for lighting the building; (3) water; and (4) paper. Write "PSA's" for your school's T.V. news program or advertisements for the newspaper encouraging the school to put these ideas into practice.

2. Set up a "human chain" to demonstrate what happens when you take a drink from a water fountain. Consider the steps involved in bringing the water to you: How did the water get into the fountain? How does water get into the pipes? How does it get into the school? Where is the county's water stored? How does it get there? From where did that water come?

   - Follow this with another "human chain," this time to demonstrate the waste water sequence. Ask questions such as: How does the water get out of the sink? Where does it go from the drain? When it leaves the pipes in the house, where does it go? etc. (Check with your community's Public Works Department for the exact local information.)

3. If a storm caused a temporary "blackout" during school hours, how would this affect your class and the school? List all the uses of electricity you can think of in the class and in the school.

   - How would such a "blackout" affect life at home, if it occurred while at home?
   - What are the different uses for electricity at home?
   - Which ones could be eliminated with little effect on your way of living? Energy conservation is everyone's responsibility.
   - Which of the uses of electricity are more important and would be missed the most? Which could be done without most easily?
   - How might the class improvise during the blackout?
   - How might parents be affected by the same blackout at home or at their places of business?
   - Have we become too dependent on electricity? If so, are there things we can do about it short of turning the clock back by a century?

Keep a record for one day of the electricity you, yourself, use at home. How much wattage did you use?

4. Inventory the waste accumulated by your class by the end of the day. Use both the contents of the wastebasket and the litter strewn on the floor. (Discuss the fact that both collections constitute SOLID WASTE, the only difference between them being that the wastebasket is a tidier way of disposing of discards than littering.) Prepare a chart of your itemized findings for a week. Determine a per capita figure. Show the results in a circle graph.

   - Which category forms the largest part of your class's solid waste? Are there ways to cut down? What percent of the solid waste in the classroom could be used in other ways or more completely before being thrown out? (Consider use of unused parts of the waste scrap paper for math calculations, writing drafts, etc.) Try different methods suggested by the class, and compare the quantity of solid waste after a few days. Which of the discards should never have been thrown away? Which can be reused? Which should be recycled?

5. Talk with the custodian to learn what is done with the wastes produced in your school. Trace the system used for solid waste disposal in your town. If possible, take a trip to a sanitary landfill site and to places where illegal dumping occurs.

   - Does the school cafeteria use washable or disposable dishes and utensils? If disposables are used, what trade-offs are involved? What economic, sanitary, and environmental factors must be considered in determining whether disposables should be used?
   - Are there alternative disposable materials available which are biodegradable? What is meant by "biodegradable"? Set up a simple experiment to determine the rate of breakdown (disintegration) of a variety of waste materials which end up in the garbage. (This might be a term project.) Which kinds of materials break down fast? moderately fast? slow? almost never? What will your environment be like if we continue to throw away materials that do not break down?
   - What, if any, problems does solid waste collection and disposal present to the community? How much of the community's total budget is allocated to solid waste collection and disposal? How much of this cost could be eliminated by decreasing our consumption of goods?
   - How does consumption of goods per capita in the United States compare with that of other developed countries? With developing countries?
   - Examine the way things are packaged. What are some reasons given for over-packaging with different wrappings and boxes many of the things we buy?
   - Where packaging is excessive, start a letter-writing campaign to the producers, suggesting ways packaging can be effective yet not excessive.

6. Conduct research to find out which of the alternative sources of energy are especially relevant to your community or nearby parts of your state.
   - If you live near an ocean, what is the current status of tidal power research? What conditions are needed for collecting tidal power energy? How close to your community might a tidal power station be safely constructed?
   - What other forms of ocean energy might be possible?
   - What is the possibility of using stream or river power to turn wheels, operate machinery, etc., if you live near such streams or rivers?

- As part of a social studies project, explore the ways a river or stream was used to power electricity, a particular industry, a mill, etc.
- Would it be feasible to once again return to the use of stream or river power?
- What is being done in and around your community about solar power?
- Would wind energy be practical in your community? How much wind is there in your area? Is it predictable? Use the Beaufort wind scale to determine wind velocities for a given period. Record your findings. Compare with weather reports.

BEAUFORT SCALE

SIGNS	NAME OF WIND	MILES PER HOUR
Flags hang down; smoke goes straight up; leaves do not move.	Calm	0
Wind moves leaves on trees; is felt on face; blows out lightweight flags.	Light Breeze	1-5
Wind moves branches of trees; blows dust and loose papers about.	Gentle Breeze	5-15
Wind sways branches; raises whitecaps on water.	Fresh Breeze	15-25
Wind makes it hard to use umbrellas; whistles in trees and wires; sways whole trees.	Strong Wind	25-35
Wind breaks branches; uproots trees; damages houses, is hard to walk against.	Gale	35-75
Wind damages houses, blows down utility poles and trees; causes great damage.	Hurricane	75-100

- What effect might increased use of nuclear power have on your community (consider social and economic effects as well as effects on the physical environment)?

7. Have a "Recycling Fair" featuring new uses for discards. Have a contest to encourage students at you school to make useful objects out of throwaways, thereby reducing the volume of waste. Develop a fair to show the general public ways of re-using (recycling) throwaways.

8. Make an "art" object out of otherwise useless pieces of trash.

ACTIVITIES RELATED TO THE STUDENT'S INNER ENVIRONMENT

1. Examine sample daily diets prepared by the class to see how much of our protein comes from meat. Compare our eating habits with those of people in the densely populated, developing nations.

    - What does the phrase, "eating high on the food pyramid" mean? Do people in the overpopulated, developing nations eat high on the food pyramid? Why? Do we? Why?
    - How much energy is lost at each level of the food chain? (about 10 percent) What are some of the ways energy is lost in the food chain?
    - Using the 10 percent rule, how many kilograms of beef would be necessary to produce one kilogram of human protein? How many kilograms of corn would be needed to give 10 kilograms of beef?
    - What foods could we eat "lower on the food pyramid" and still derive the protein we need? Which of these foods do the students in your class like? Which foods do they dislike? What are the main reasons for liking or disliking foods? Can people's eating preferences be changed? How?

2. There are many ways other than poor eating habits which hurt our "inner environments." Noise pollution is one example. Sounds are around us all the time. We become used to them, often not even hearing them. Sit for two minutes with eyes closed and just listen for sounds. List those heard.

    - Make a tape recording of different sounds in your school or neighborhood environment. How many can you identify? Borrow a sound meter and measure the decibel level of different sounds.
    - Which sounds could be considered noises? What is noise? What is excess noise?
    - How is noise measured?
    - How noisy is your school? Try to calculate the decibel level in the cafeteria; at a basketball game; in the school yard at lunchtime.
    - At what point does radio or record-player music become noise?
    - How can high decibel levels harm the body?
    - How many of you use a "walkman" to listen to your favorite singers? At which volume do you play it? Can anyone else around you hear it? How can high volume sounds, directed at your eardrum, affect your hearing? Consult a physician or hearing specialist about how loud such radios should be played.

EYE-OPENER WORKSHEET #3--HOW CAN YOU GET SOMETHING DONE?

Students often have ideas about how their school or school grounds could be improved, but they do not know how to insure that these ideas are used.

Several general ways of getting something done are listed below.

A. Do it yourself.

B. Get your classmates to help you make the improvement.

C. Talk with your teacher.

D. Talk with the principal.

E. Ask the Student Council to help.

F. Talk with the Parents Association at school.

G. Take the problem to the School Board.

H. Get in touch with a local environmental group.

I. Contact a municipal or county agency.

J. Write to an elected official.

K. Write an article for the school newspaper.

L. Write a letter to the editor of a local newspaper, or to a TV commentator.

Next to each of the sample improvements students might want, write the letter(s) standing for the method(s) you think would be best for handling the particular problem.

Problem	*Best Method(s) to be Used*
The school grounds are drab and bare. You think they should be landscaped.	
You would like to see your classroom kept clean and litter-free.	
The school cafeteria uses styrofoam trays. You think another kind of tray should be used.	
There is a dangerous intersection near school. You want a traffic light.	
You think the school would be more attractive if a large mural were painted on the wall at the front entrance.	
Fire Department regulations prevent using wall hangings and furniture your classmates brought in to beautify the room.	
You think the school should try to make money for some special project by taking part in a recycling project.	

On a separate sheet of paper, draw a flowchart showing the steps involved in handling one of the problems.

SUGGESTED ACTIVITIES RELATED TO EYE-OPENER WORKSHEET #3

1. With your class, identify a problem in the class, school, or community. Working in small groups, have the students consider the problem as it might be seen by a person with a Native American, Hispanic, African American, Asian, or Anglo heritage. Each group's process should include research on and, where possible, sharing from personal perspectives within the particular culture.

   As a next step you might invite to your class persons from the community representing these heritages and ask for their help in viewing the world through different eyes.

   On the basis of the above, make a survey sheet for students from other classes to see if they agree and identify with the cultural behaviors the sheet attributes to their heritage, recognizing that within each group there are individual differences.

   - Are people's opinions about community (class, school, or neighborhood) problems more affected by their cultural heritage or by their own personal experiences and thoughts? Is it possible to generalize?
   - Do students from the various cultural backgrounds feel that they are less influenced in their decisionmaking by tradition and heritage than their parents are? Their grandparents? If so, how do they explain this change?
   - Is there such a thing as a "Native American position"? A "Hispanic position"? An "African American position"? An "Asian position"? An "Anglo position"? Discuss.

   Throughout this process have the students look at the similarities and the differences among the cultures, and help them come to an understanding of the reasons for both.

2. Select a controversial school topic (litter, crowded parking lots, overconsumption of paper, need for landscaping, noise in the halls). Assign students the roles of all members of the school community concerned with the issue (principal, teachers, students, parents, custodian, neighbors). Set up a mock conference and have each person express his or her viewpoint about the issue.

   - Why do people in different "niches" have different points of view?
   - Does role-playing help in understanding other people's positions?
   - What systems can be devised in the school community to increase communication and understanding of other people's niches, opinions, and rights?

THE COMMUNITY--LOCAL AND GLOBAL

EYE-OPENER WORKSHEET #4--CHECKLIST FOR YOUR COMMUNITY'S ENVIRONMENTAL CONCERNS

The list below is a catalog of world-wide environmental issues, problems, and concerns. Some pertain to your community and some do not. Some would not have been considered problems ten years ago but might be ten years from now.

Rate each item as it relates to your community, using the following scale: 5 - major environmental concern, 4 - growing environmental concern, 3 - minor environmental concern, 2 - not a concern, 1 - no opinion.

AREA OF CONCERN	RATING	AREA OF CONCERN	RATING
CHEMICAL, BIOLOGICAL AND RADIOLOGICAL CONTAMINATION:		**ECONOMIC/SOCIAL/CULTURAL ENVIRONMENTS (cont'd):**	
Agricultural chemicals		Poverty	
Pesticides, fungicides, herbicides, insecticides		Trade balances--comparative advantages	
Metal poisoning		Civic responsibility	
Detergents		Cultural identity--assimilation	
Plant and animal diseases		Communications	
Pests		International relations	
Radiation (microwave, et al.)		Refugees	
Acid rain		Homelessness	
CONSUMERISM		**ENERGY:**	
Packaging		Power generation	
Advertising		Fuel supplies	
Product durability		International trade policies	
Consumer information		New systems and concepts (tidal power, solar)	
Impulse buying		**ENVIRONMENTAL PLANNING AND DESIGN:**	
Status products		(See also Land Use and Pollution: Visual/Aesthetic)	
Planned obsolescence		**HEALTH:**	
ECONOMIC/SOCIAL/CULTURAL ENVIRONMENTS:		Pollution	
Lifestyle		Food additives	
Housing		Drugs	
Jobs		Stress (congestion, population density, competitiveness)	

AREA OF CONCERN	RATING	AREA OF CONCERN	RATING
LAND USE:		**NATURAL ENVIRONMENTS (cont'd):**	
Reclamation/flood control		Endangered species	
Construction		Communities/ecosystems	
Rock quarries		Preservation	
Planning		Exotic plant invasion	
Recreation		Exotic animal invasion	
Open space/scenic and historic preservation		**POLLUTION:**	
Real estate		Air:	
Urban renewal		Particulates	
Coastal zone management		Engine emission	
Preservation of natural resources		Incineration or wood burning stove	
Citizen participation/ awareness		Industrial effluent	
Responsive officials		Smog	
NATURAL ENVIRONMENTS:		Acid rain	
Habitats:		Water:	
Coral reef		Flood control	
Coastal zone		Eutrophication	
Grassflats		Sedimentation	
Tidal marsh		Thermal discharge	
Rocky shoreline		Soft and solid waste (see also Solid Waste)	
Fresh water wetlands		Agricultural runoff	
Island/beach		Municipal sewage systems	
Lake		Landfill runoff	
Mangrove		Contaminated well fields	
River		Airport runoff	
Desert		Storm-water runoff	
Forest		Limnology	
Swamps		Deep well injection of liquid waste	
Mountain		Salt water intrusion	
Prairie		Water management	
Pineland		The rain machine	
Hammock		Ground water pollution	
People dominated			

AREA OF CONCERN	RATING	AREA OF CONCERN	RATING
POLLUTION (cont'd):		**RESOURCES (cont'd):**	
Noise:		Nonrenewable:	
Automobile traffic		Minerals	
Construction		Fossil fuels (see also Energy)	
Air traffic		**SOLID WASTE:**	
Visual/Aesthetic:		Recycling	
Signs and billboards		Recovery	
Construction design		Disposal methods	
Transmission lines		Source reduction (packaging)	
Litter		Composting	
Graffiti		**TRANSPORTATION:**	
POPULATION:		Mass transit	
Distribution and density		Motor vehicles and highways	
Growth rate		Aircraft and airports	
Migration		Safety	
Mobility and food supply and resources		Traffic congestion	
RESOURCES:		New systems and concepts	
Recycling		Mobility	
Renewable:		Bike paths	
Soil		**OTHER:**	
Water			
Forests			
Fishery and wildlife management			

Collate the responses to any 10 Areas of Concern selected by the class. Present this information in the format of an "Opinionaire." Discuss student reactions to these findings.

Example: Questioned about the importance of the issue of ______________________________
to (name of community), students in ______________________________responded as follows:

Major Concern..........	________%	Not Applicable.........	________%
Of Growing Concern.....	________%	No Opinion.............	________%
Minor Concern..........	________%		

- For two weeks, keep a clipping file of newspaper articles related to environmental issues, problems, and concerns. Count them as votes for the significance of various Areas of Concern above. According to the newspaper articles, what are your community's major environmental concerns at this time? Compare the media tabulations to your own assessment. Contact your local community newspaper and ask if your survey results can be published.
- As a class, choose any one major environmental problem that affects the community. List at least 5 ways a citizen can express concern to the proper authorities on the problem. Divide the class into groups. Each group selects one of the methods, follows through, and sees what results are achieved. Compare results from different approaches. Send copies of your results to community leaders and post them in key locations around your community.

SUGGESTED ACTIVITIES RELATED TO EYE-OPENER WORKSHEET #4

WATER

1. 74% of the earth is salt water. 3% of the earth is fresh water. 1.7% is polluted fresh water. 23% of the earth is land. 13% is inhabitable.

   - Nothing lives without water. How serious do you think the water supply problem is in your community?
     ________ the worst problem we have ________ a very bad problem
     ________ a bad problem ________a problem, but not really bad
     _________ no problem at all
   - Keep a record for two weeks. Each time you read or hear about water supply in your community, place a tally mark ( ) below.
     a. Heard about water ______________________________
     b. Read about water ______________________________
     Do you think your estimate of how bad the problem is was right or wrong?______________________________

2. When was the last time your community had a water shortage? Check with your local newspaper for information about that shortage. Consult your town mayor or manager about the measures taken to avert a real crisis. Should water conservation occur only when a crisis is at hand? List the ways each citizen can help reduce their water usage without imposing any unnecessary hardships. Make a list of water use practices that are wasteful. Alongside, make a list of year-round water-use practices that will save water and perhaps avoid a water shortage if everyone made the effort.

3. Draw a diagram of the Water Cycle.

   Where does the water you use come from?
   If it comes from an aquifer, what is an aquifer?
   What does recharge mean?
   What part of the water cycle recharges your water supply?

4. What part does your home play in the water cycle?

   - What does evapotranspiration mean?
   - Look around your home to see which places or things give off water to the atmosphere. Check those you find. Add others not listed.

     _____swimming pool
     _____shrubs
     _____grassy lawns
     _____air conditioners
     _____trees
     _____others
   - Find out for yourself whether these things do give off water to the atmosphere.

     a. Tie a small plastic bag around some leaves on a tree or shrub. What do you see after a day or two?
     b. Place a clear plastic cup upside down in the grass. What do you see after a day or two?
     c. If you have a swimming pool or a bird bath, use a grease pencil to mark the water level. What change do you see after a week?
     d. How can we show that water exists in the air around us? Fill a glass full of ice cubes. Set it on the desk for 15-30 minutes. Observe and record any and all changes that occur with the glass of ice cubes. What evidence do you have that water does exist in the air around us?

- How do the things around your house that give off water to the atmosphere help recharge your water supply?

5. Write maxims about how to conserve water at school. Create a pamphlet for the school. Include administrators, students, custodians, cafeteria staff. Monitor school water consumption to note any change.

6. Plan a poster campaign based on the theme: "Wanted: Water Abusers!"

7. Produce posters depicting common household water abuses and water conservation efforts. Display in school, public library, bank, etc.

8. Discuss the statement, "Since people are land animals, their primary concern is, and should be, what happens to land, not to water."

   Is this the perspective most people accept either consciously or subconsciously?
   What problems could this limited view create?

9. Investigate the methods used to insure safe drinking water in your community.

   - Write letters to students in other communities asking: What is the primary source of your drinking water? How is your primary source protected from contamination? How is your water purified?
   - Discuss the role economics, taxes, and politics play in the decisions affecting water.

10. List the different ways fresh water is used in your community.

    - Which uses are necessary? (drinking, bathing, cooking, swimming, farming, fishing.)
    - Which uses are luxuries that you feel you could give up?
    - Which uses tie directly into your community's economy? What impact would changes in water usage have on these areas of our economy?

HAZARDOUS WASTES

1. Research the chemicals or other substances used by each of the major industries in your community. How are the materials or chemicals used by the industry? What are the products produced?

   - Does your state have "right-to-know" legislation for workers regarding materials and chemicals used by their industries?
   - Discuss whether the products produced by the industries in your community are harmful in any way to living organisms, including people. What effort is being made to make the general public aware of these harmful products and the harm they can do if improperly used? If harmful, should they be used at all? Do alternatives exist that are less harmful?
   - Discuss the kinds of waste products produced. Are there harmful waste products?
   - Discuss what happens to these harmful substances. What efforts do the industries make to insure safe handling and safe disposal of such products?

3. Are there any toxic waste dumps in your community? How are the toxic waste dumps and the industries producing harmful waste products regulated? If they violate regulations, what are the consequences?

4. Are any of these industries or toxic waste dumps located near residential areas? If so, what are the ethnic and socio-economic characteristics of these residential areas?

- What health and safety risks might the industries and dumps pose to the people living in the vicinity?
- What control do the people living in these areas have over the citing of these facilities? What input do they have into the ongoing functioning of these facilities?

4. Consider the hypothetical situation in which the students own a small industry. Conduct a forum at which to discuss how to go about disposing of the chemical wastes of production.

5. Do a "hazardous waste" hunt at home. Look in kitchen cupboards, bathrooms, garages, cellars, and closets for substances (cleaning supplies, lubricants, medicines, paints, solvents, weed killers, pesticides, fertilizers, antifreeze, etc.). Discuss with your parents how they dispose of hazardous or toxic substances they no longer need. Prepare a class composite on this data.

Substance	**Disposal Method***			
	Community Refuse Service	**Dumped Down Drain**	**Hauled to Landfill**	**Dumped in Backyard or Open Spaces**

*Enter number of students who reported this disposal method for each substance.

- Do parents find it a problem to know what to do with these substances?
- Which method(s) are most frequently used?
- Which substances are most difficult to dispose of?
- How do students and their families think the disposal problem could best be resolved?
- Contact your local environmental health and energy department for current information on hazardous waste management issues. Find out if the local, state, or federal governments are considering additional legislation concerning hazardous wastes. If so, become informed on the issues by reading or inviting knowledgeable speakers to class. After discussion, as a class take a position on the legislation, and inform the appropriate elected officials of your opinions.

SOLID WASTE

1. Sort through your garbage at home before discarding it. Make a list of the kinds of things you find, then classify them into different groups.

- What things could be recycled?
  Why is it important to recycle the things we can?
- How can we use those things that cannot be recycled?
- Some trash cannot be burned. Why?

2. Weigh your garbage can empty. Weigh it full. Estimate your weekly weight. Your yearly weight.

- What will happen if we run out of places to put our garbage?
- Name some products that are over-packaged, producing unnecessary garbage.

3. Keep a record for one week of the composition of an average family's solid waste. Have as many members of the class participate as possible, and calculate an average.

   - What percent of our solid waste is paper and cardboard? Iron and steel? Aluminum? Glass and ceramics? Food scraps and garden waste? Plastic? Rags? Other waste? Make a graph.
   - What is the original source of each of the different waste products in your garbage and trash containers? These are referred to as our basic natural resources. Is there an endless supply of these basic resources? Which would be considered renewable? Non-renewable? If we continue to dump garbage and wastes in the ocean or in landfills, what will we do when these resources run out?
   - What value would there be in recycling food wastes? What is compost? What does compost do for the soil and for plants?
   - Calculate the weight of paper thrown out by all the families in the class. Based on this figure, estimate the amount of paper thrown out each week in your community.

4. Research such methods of solid waste disposal as composting, burning for electric power, and biomass conversion to methane. Your studies should address such questions as:

   - Where are these methods currently being used successfully?
   - How feasible is each of these methods in your community?
   - What other innovative methods should be considered?

5. Make a miniature landfill in a large glass jar or milk container. Place some soil in the bottom of the container. Place a piece of fruit and a piece of plastic on top of the soil. Cover these items with more soil. Dampen the soil and put the container in a warm place. Check once a week for a month or two. Has the fruit changed its appearance? The plastic? Record the findings every week. Which is more harmful to the environment--the fruit or the plastic?

AIR AND GLOBAL ATMOSPHERIC PROBLEMS

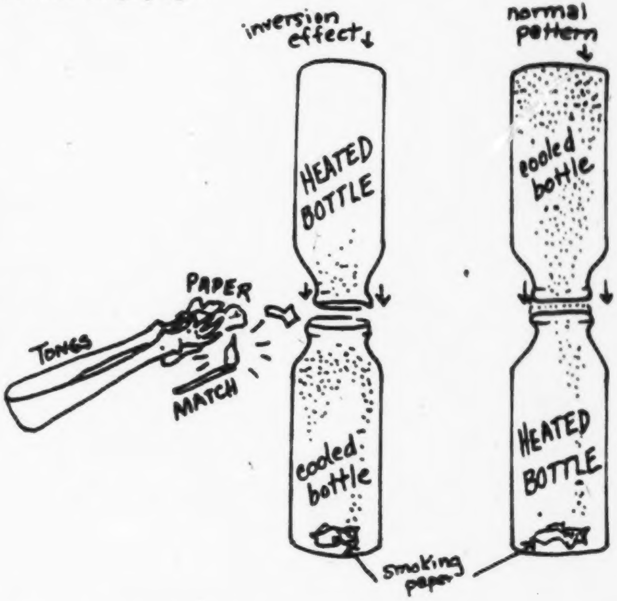
1. Be "Air Pollution Detectives." Take a walk outside the school and note every indication you can find of air pollution. You should use your sense of sight, smell and touch. Your findings might include dirt particles, smog, bad odors, leaves harmed by acid rain, buildings or statues harmed by acid rain, etc. Research and discussion should lead to an understanding of local sources of air pollution.

2. In many communities, air pollution problems are heightened by temperature inversions. Discuss the normal weather convection patterns in which higher, heavier, cooler air falls pushing the warmer, lighter air close to the earth upward. Draw a diagram on the board showing the sun's rays heating the earth, and the reradiation from the earth warming the air just above it. Show, by the diagram, how it rises, cools and falls to the earth.

   - Discuss the conditions which exist during an inversion. The cold winter air rolls off mountains and settles in the lowlands. The sun is not warm enough to heat the air near the surface sufficiently for it to rise. The warmer air serves as a lid to trap the cool air below it. Inversion, of itself, does not cause a problem; however, when there is pollution close to the surface of the earth, it is trapped there.

- Demonstrate thermal (or temperature) inversion by using four bottles as shown in the diagram on the following page.

Chill two bottles by placing them in a refrigerator. Warm two bottles by placing them in the hot sun or in a warm place in the house. Then, use them in the manner illustrated at the right.



3. Through discussion based on students' reading and television viewing, develop the understanding that some of the problems with our atmosphere are those which occur close to the surface of the earth (like particulate pollution and the harmful gases trapped by thermal inversions) and that some occur higher up in the atmosphere. Discuss acid rain, global warming and ozone depletion. Students should come to realize the role we, as consumers, play in these global problems. Many of the activities listed preceding this one can be helpful in reinforcing the concept that we are all part of the problem, and can be part of the solution.

4. To understand the effects of acid rain, do several experiments:

   - Set up two glasses. Label one glass "water," the other "vinegar." Add a penny (minted before 1983) to each glass. Barely cover one penny with vinegar; the other with water. Dip a pH strip into each glass. Record the pH of the vinegar. If the pH of the water is below 6, add a tiny amount of baking soda or ammonia. Record the final pH. Place plastic wrap over each glass to prevent evaporation. Observe the changes which have occurred after five days. Record the findings. At the end of the experiment, wash off the pennies and discard the contents of the glasses. Discuss what happened. How does this relate to acid rain and its effects on us?
   - As a class, participate in a national acid rain monitoring program. Check the pH of the local rain, then share that information with young people throughout the country. For further information, call National Geographic Society at 1-800-368-2728 and ask about "Kidsnet." You can also write the Citizens Acid Rain Monitoring Network, National Audubon Society, 950 Third Avenue, New York, NY 10022.
   - To get some clue about why many of our famous monuments and buildings are eroding, try an experiment with two pieces of chalk. Set up two glasses. Put a piece of chalk on which you have carved a line in each glass. Cover the chalk in one glass with vinegar; the other with distilled water, or water with a pH of 6 (use baking soda to

adjust the pH). Remove the chalk at the end of 24 hours, Did anything happen? Record your observations. Explain if there are any differences between the two pieces of chalk.

- Some parts of the country are less affected by acid rain than others with similarly acidic rain water. It has been learned that alkaline soils have better buffering capacities. Conduct an experiment to see how different soils respond to acid rain. Collect samples of soil from several different locations. Be sure to get one with a high limestone content. Put equal amounts of soil into the same kinds of funnel which have been placed into jars. Make a vinegar solution with a pH of 4. Pour equal amounts of this solution into each jar. Use pH strips to measure the acidity of the water which percolates into the containers. Set up a chart showing the location of each soil sample, its composition (if you can get that information from the Soil Conservation Service) and the pH of the water which seeped through.

5. The greenhouse effect and the effects of global warming can be demonstrated by a simple experiment. Place two thermometers in a sunny spot. After five minutes, read the temperatures and record them on a chart. Cover one thermometer with a glass jar. Record the temperatures of both thermometers every minute for ten minutes. Discuss findings. Make a graph showing the temperatures of both thermometers and the time.

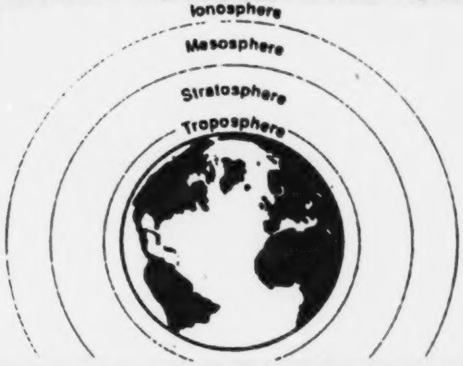
6. Conduct a "BEAT THE HEAT" drive in your class or school. Use the "Pledge on Global Warming" in Section M as a basis for your campaign. Set a goal for the number of pledges you want to obtain in two weeks. Devise an eye-catching chart to record your progress, and display it in a prominent place in the school. To help families decide how they might realistically save the one ton of CO_2 they pledge to avoid sending into the atmosphere in one year, calculate several combinations of life style modifications they might make. Base these sample "packages" on the information provided in the "Pledge on Global Warming" page.

7. Set up a bulletin board display entitled, "OZONE--FRIEND OR FOE?" Plan the display's message to provide an answer to a question often heard about why ozone is considered a pollutant if, at the same time, we are worried about "holes" in the ozone layer. Some, or all, of the information in the box on the following two pages might be used on the board to answer the question.

   - Do a label hunt in your home, school or neighborhood store. Read labels of common household products to see which contain the chemicals reponsible for producing ground level ozone. Some ingredients to look for include: petroleum distillates, terpene, aliphatic hydrocarbons, glycols and benzenes. The products which might contain these substances are: spray paint; hair spray; spray deodorants; cigarette lighter fluid; charcoal lighter fluid; car care products such as waxes, carburetor cleaners and anti-freeze; varnish strippers; floor finishers; septic tank cleaners; oil-based paints and paint thinners. Prepare a list of these products to be shared with other students and their families.

OZONE FACTS

- There are two types of ozone--tropospheric (or ground level; extends outward 7 to 10 miles from the earth's surface) and stratospheric (ranges 7 to 35 miles above the earth's surface). It is important that we cut back on the production of the former, and avoid depletion of the latter.



- Ozone is a colorless, pungent, toxic gas. An ozone molecule contains three oxygen atoms (O_3) whereas an oxygen molecule contains two (O_2).

- Ozone has bad health effects, irritating most parts of the respiratory system. It is particularly harmful for people with such chronic diseases as asthma and emphysema.

  - Ground level ozone is produced by a complex series of chemical reactions between volatile organic compounds (VOC's) and nitrogen oxides (NOx) in the presence of sunlight. VOC's and NOx come primarily from fossil fuel combustion. Most of the VOC's are hydrocarbons which evaporate very quickly.

  - Stratospheric ozone was formed approximately 400 million years ago as a result of the action of ultraviolet radiation from the sun on oxygen present in the atmosphere. This layer of ozone is important to the Earth because it blocks out the excessive amounts of ultraviolet radiation which can cause skin cancer, eye damage and disturbance of the immune system.

- Stratospheric ozone depletion is caused by a family of chemicals known as chlorofluorocarbons (CFC's) and halons, which were developed in the 30's and 40's for use in refrigeration, foam insulation and fire suppression. They are broken down by ultraviolet radiation in the stratosphere into free carbon, fluorine, bromine and chlorine atoms which then interact with the ozone molecules and destroy them.

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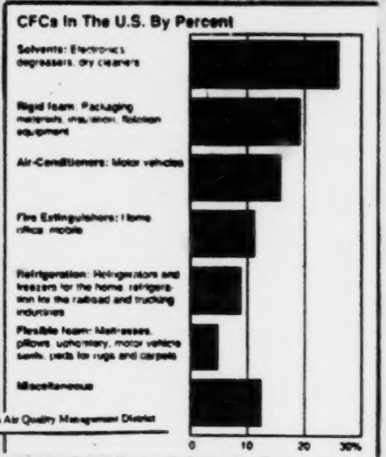
O Z O N E   F A C T S (cont'd)

- Ground level ozone and stratospheric ozone cannot substitute for each other. The former is not concentrated enough to provide protection from ultraviolet radiation. And, the ozone produced at ground level does not drift high enough into the atmosphere to serve as a shield. It usually reverts into oxygen after a few days.



Source: Bay Area Air Quality Management District

The National Resources Defense Council has provided a list of commonly used CFC and halon compounds. People should carry this information with them to know which products they should avoid purchasing in order to protect the ozone layer.

NRDC Stratospheric Distress Card

CFC-11	Trichlorofluoromethane
CFC-12	Dichlorodifluoromethane
CFC-113	Trichlorotrifluoroethane
CFC-114	Dichlorotetrafluoroethane
CFC-115	(Mono) chloropentafluoroethane
CFC-140a	Methyl Chloroform
Halon-1211	Bromochlorodifluoroethane
Halon-1301	Bromotrifluoroethane
Halon-2402	Dibromotetrafluoroethane

AVOID PURCHASING THESE COMPOUNDS

The information in "OZONE FACTS" was abstracted with permission from *What's News in Environmental Health*, a publication of the Albuquerque Environmental Health Department on current issues of concern to citizens; and *Ozone Layer Depletion and Public Health*, a pamphlet developed with a grant from the American Public Health Association.

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- Check stores to see which products contain the ozone depleting chemicals listed on the NRDC Stratospheric Distress Card. Share this information with other students and their families.
- Research the status of legislation aimed at decreasing the use of ozone depleting chemicals.
- Research the Clean Air Act of 1990 to find out how prevalent a problem ground level ozone is in our country. Discuss what is being done about it. (See Section J for information about the Clean Air Act of 1990.)
- Take a picture of your bulletin board display. Send it to the Sierra Club National Environmental Education Committee, 4300 Sunningdale, NE, Albuquerque, NM 87110 for possible inclusion in the next update of *The Team Notebook*.
- For further information about ozone depletion, call the CFC Hotline, 1-800-296-1996.

POPULATION

1. To Measure How Population Growth Increases The Rate At Which Resources Are Used

Materials:

2 baby food jars
1 level teaspoon of powdered milk
1 level teaspoon of dry yeast
1 dropper bottle of methylene blue solution (available at tropical fish stores)
2 five-mil air pistons or hypodermic syringes
Dropper
2 teaspoons
4 test tubes (all the same size with a capacity of at least 10 ml)
1 test tube rack
Glass marking pencil
Watch or clock

Procedure:

1. Stir one level teaspoon of powdered milk into 20 ml of tap water in a baby food jar.
2. Stir one level teaspoon of dry yeast into 20 ml of tap water in another baby food jar.
3. Label the tubes #1, #2, #3, and #4.
4. Using an air piston, add four ml of the milk solution to each test tube.
5. Add 15 drops of methylene blue solution to each tube. Mix thoroughly. Methylene blue is an indicator. The blue color shows the presence of dissolved oxygen. As the oxygen is used, the blue indicator becomes colorless.
6. Mix tube #1 thoroughly but quickly. Record the exact time the mixing ends. Once the timing has begun, don't disturb the tube. Bumping it will introduce air into the liquid.
7. Add two drops of the yeast solution to test tube #2. Quickly mix and record the time.
8. Add one ml of the yeast solution to test tube #3. Quickly mix and record the time.
9. Add five ml of the yeast solution to test tube #4. Quickly mix and record the time.
10. Observe the changes carefully. For each tube, record the time when you see that the blue color has disappeared from all but the surface area (oxygen in the air).
11. Put your data in a chart like this:

Rate of O_2 Consumption

Test Tube	Time of Mixing	Time Change Observed	Elapsed Time
#1			
#2			
#3			
#4			

Conclusion:

Compare and contrast the observations you made in the four test tubes. How are the test tubes like your state?

Review for you:

Q1. What was the source of food energy? ______________________________

Q2. What was the source of oxygen in the liquid? ______________________

Q3. What kind of organism is your test population? ____________________

Q4. Did all four tubes contain oxygen? _______ How do you know? _______
____

Q5. The need living things have for oxygen is known as the biochemical oxygen demand (B.O.D.). What happened as the population increased?
____

Q6. Predict what would happen to the organisms if the tubes were left undisturbed for a week. Explain your answer. ____________________
____

Q7. Did the oxygen disappear fastest in the tube with the greatest population? ____

Q8. What was the purpose of tube #1? _________________________________

Think about this:

Q9. Visit the library and find the United States population statistics. Record the United States population for each 20 years between 1920 and 1980. How does its increase compare with your state's?

Q10. Graph your state's population for each 20 years between 1920 and 1980. Continue the graph for 100 years into the future, assuming population will double every 20 years.

Q11. Write a few paragraphs describing what might be a typical day for your family in the year 2020. Assume that your family lives in your state and that your state's population continues to grow as it has in the past.

Q12. The yeast population grew until all the oxygen was gone. In your experiment, oxygen was the limiting factor for the yeast population. Food, diseases, and space are other common limiting factors. What might be some possible limiting factors for your state's population?

Adapted from:
Florida Middle School Energy Education Project
Florida Electric Utilities Coordination Group
402 Reo Street, Suite 214
Tampa, FL 33609

2. "Population Musical Chairs"

After a unit on endangered species, play "Population Musical Chairs." Each participant wears the name or a picture of an endangered animal. When the music starts everyone plays musical chairs. When the music stops, the eliminated player places his/her identifying sign on the removed chair and also selects a card from a table marked "Loss of Habitat" which tells the reason(s) for that organism's extinction. This card is placed next to the name of the extinct animal. These cards will have been prepared in advance as a result of the students' research. Each card should mention one cause of habitat destruction, i.e., deforestation, urban growth, water pollution, etc., and there should be a card to correspond to the cause of habitat destruction for each animal in the game. At the end of the game, discuss the fact that the "winner" was able to avoid extinction by chance. In reality, what determines whether or not an animal becomes extinct?

- Discuss the role human overpopulation plays in habitat loss.
- Do research to find which countries are becoming most overpopulated. Enter these findings on a chart.
- What efforts are being made to slow down population growth? How successful are they?
- Discuss the statement that the United States does more harm with low population growth than other countries do with much higher ones.

This activity was based on a lesson plan prepared by the Population Committee of the Northeast Ohio Sierra Club.

ACTIVISM ACTIVITIES

1. Discuss with class the importance of critical thinking for all citizens when evaluating a controversial community issue. In advocacy situations, speakers and writers frequently use propaganda techniques to sway public opinion or decision makers.

   - Use the following list of twenty propaganda strategies to help analyze statements related to a current local issue.

a.	FOLKSY APPEAL	a user of the product/belief evokes a feeling of neighborly intimacy
b.	BANDWAGON	everybody's doing it--you should, too
c.	TESTIMONIAL	a famous person's endorsement to buy/believe
d.	NAME CALLING	your own image or status is attacked in an effort to persuade you
e.	FLAG WAVING	an appeal is made to your patriotism or morals
f.	HALF FACT/CARD STACKING	a portion of the story is told in an attempt to mislead or entice you
g.	TRANSFER	a non-verbal association is made between a product or belief and a famous or admired person
h.	REPETITION	we buy or believe because of the frequency of exposure to the product/idea
i.	EMOTIONAL OR DESCRIPTIVE LANGUAGE	a word or phrase that expresses and arouses a feeling or emotion for or against that object
j.	IRRELEVANCY	physical appearance, statistics, degrees, titles, technical jargon, slogans or formulas are employed to suggest ideas to us when they are really irrelevant
k.	APPEAL TO PITY	presenting an object of sympathy to solicit favorable action
l.	APPEAL TO FLATTERY	persuasion by complimenting an area in which we excel or desire to excel
m.	RIDICULE	poking fun at those who oppose the proposition
n.	PRESTIGE	inducement to buy/believe by suggesting that it will bring or maintain status
o.	PREJUDICE	persuasion by association with one of your positive or negative prejudices or biases

p.	BARGAIN APPEAL	appealing to your desire to save money
q.	PRACTICAL CONSEQUENCES	appeals to our concern for our own personal welfare
r.	PASSING FROM THE ACCEPTABLE TO THE DUBIOUS	usually a series of propositions--early statements are believable but later ones are questionable
s.	GLITTERING GENERALITY	blanket conclusions are made with lack of evidence
t.	FAULTY ANALOGY	assumption is made that because two things are alike in one way, they will be alike in others

- Set up a role playing situation about a current and controversial environmental topic. Assign students roles and several of the above propaganda strategies to include in their statements. Have the class identify the strategies each speaker uses. Use the chart below to keep a record.

TECHNIQUE	**FREQUENCY**	**CATCH PHRASES**	**TECHNIQUE**	**FREQUENCY**	**CATCH PHRASES**
FOLKSY			PITY		
BANDWAGON			FLATTERY		
TESTIMONIAL			RIDICULE		
NAME-CALLING			PRESTIGE		
FLAG-WAVING			PREJUDICE		
HALF-FACT			BARGAIN		
TRANSFER			PRAC.CONSEQ.		
REPETITION			ACCEPT.-DUB.		
EMOT. LANG.			GENERALITY		
IRRELEVANCY			FAULTY ANAL.		

Based on this speaker's use of propaganda techniques, I make the following conclusions about his/her presentation:

Credit: 1979 New Mexico Environmental Education Association Annual Conference.

2. Conduct a study of citizen participation in local issues. Have each student ask five people of voting age:

   a. if they voted in the last mayoral election/the last school board election;
   b. how many school board meetings they have attended;
   c. if they ever attended a city council meeting or a community planning board meeting;
   d. if they belong to local citizens' organizations such as block associations or homeowners' groups.
   e. if they belong to larger public interest groups.

   - From this informal survey, does it appear that most people are involved in their local government?
   - Is local participation encouraged in your community?
   - Obtain information about voting in your community in the last mayoral election. Analyze the percentage of registered and nonregistered people of voting age; the percentage of those who voted; the statistical breakdown by age, sex, ethnicity, and political party of those who voted.
   - Why is citizen participation in community problems important?

3. Conduct a workshop on organizing for effective citizen participation in local environmental problems. Topics in the workshop might include:

   - What should be considered in selecting an action project? (Scope of project, need, time frame, funding.)
   - What other groups might be called upon to participate in a project?
   - What should be the initial base in starting to organize a project? (Class, school, community group, a combination.)
   - What resources will be needed to launch a project?
   - Where might funding be obtained?
   - What outreach and promotional strategies can be used?
   - How can a project strategy schematic be prepared?
   - How can realistic outcomes be expected? How can they best be achieved?

4. Have students write a "mock" issue of *Trends* or *Parade* containing articles about recent developments in their community. These articles should discuss the ways in which the changing conditions are affecting the neighborhood and what may be in store for the future. Include:

   - economic hardships (inflation, unemployment)
   - increased land development
   - pollution
   - crime
   - historic preservation
   - new buildings or amenities
   - etc.

5. Compile a list of neighborhood problems. Students can prepare this based on their own observations, on interviews with neighborhood leaders, and on information obtained from newspapers and electronic media.

- Which of the problems listed should be given high priority?
- Are any of these problems currently being addressed? If so, by whom?
- What solutions can the students suggest for these problems? Who should initiate these solutions?
- Select one problem for further study and for student action. After obtaining as much information as possible about the problems, have students develop their own proposals for solutions. Bring these proposals to the attention of neighborhood leaders, other members of the community, and, subsequently, to the appropriate agencies.

6. Ask the students to complete the following sentences:

   - If I could change just one thing in this community it would be . . .
   - The single greatest problem this community has is . . .
   - If I had $10 million to spend on this community, I would . . .
   - The single best thing in this community is . . .
   - The people in this community make me proud because . . .
   - In the future, this community . . .

7. Have students, working in groups, rate their community on each of the following:

   - degree to which the community's development has adhered to a Comprehensive Plan if there is one
   - adequate open space in the community
   - adequate parks
   - traffic congestion
   - commercial areas separate from residential areas
   - population density
   - water quality
   - degree of citizens' involvement in community affairs
   - responsiveness of elected officials to citizens
   - friendliness of residents to non-residents
   - friendliness of residents to each other
   - quality of community-shared activities
   - relationship between the elderly and the younger generation
   - amount of "space" allowed young people
   - the schools
   - crime

   - Develop plans to improve those areas you feel could be better and could give more "sense of place" to your community.

8. Have students deliberate an environmental problem that is before the United States Senate. They will then take part in an imaginary Senate

debate regarding passing a law concerning the problem. They will consider:

- What a good law must contain
- What the economic cost of the law will be
- Where the money will come from
- Who or what will benefit from the law
- Who will oppose the law
- How the law will be enforced
- What the short and long term impacts of the law will be
- How one goes about raising support for the law
- What changes or compromises in the law may be acceptable in order to get it passed

Working in three groups of senators--with each group taking a different position--the students will argue the bill. Then they will take time to discuss, negotiate, and make amendments. Finally, the students will vote for passage of the best bill.*

A sample lesson is on the following pages.

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* Environmental law activity courtesy of Ruth S. Musgrave, Program Director, Center for Wildlife Law, Institute of Public Law, School of Law, The University of New Mexico, 1117 Stanford NE, Albuquerque, NM 87131-1446.

SAMPLE LESSON

CREATING A LAW

Various species of fish, wildlife, and plants have become extinct in the United States. In addition, certain other species have become so few in number that it is likely they will also become extinct if action is not taken quickly. This situation has occurred for several reasons. First, there have not been adequate laws to protect the endangered species from hunters and collectors. Second, urban industrial growth has taken place without concern for the protection of plants, fish, and wildlife. Third, the use of dangerous pesticides in agriculture has destroyed certain plants and animals.

You and other members of Congress have the duty and the power to make new laws and change old ones. You begin to think about the kind of law that might help solve the problem of endangered species. One of your first steps is to see what laws already exist that might help deal with the problem. You find there is a law called the Federal Endangered Species Law. Your next step will be to evaluate this law.

The Federal Endangered Species Law

The Federal Endangered Species Law

Purpose: The purpose of this law is to provide a program for the conservation of endangered species of fish, wildlife, and plants in the particular locations in which they are found.

With regard to the animals specified in this law (the specific animals are not listed here), it is a federal crime to
(a) import any such species into, or export any such species out of the United States.
(b) possess, deliver, carry, transport, or ship by any means whatsoever, any such species, and
(c) sell or offer for sale any such species.

Among the penalties provided under the federal law, any person who knowingly violates this law may be fined up to $10,000 for each violation.

Evaluating the Endangered Species Law

Read the following questions and share your answers with the rest of the class.

1. What law is to be evaluated?
2. What is the purpose of the law?
3. Is a law necessary or are there better ways to achieve the purpose?
4. What do you think are some effects of the law?
5. What are the strengths and weaknesses of the law?
6. Do you think the law should be kept as it is, changed, or eliminated? Why?

Positions of Senatorial Groups

Your class should be divided into the following three groups of senators, each taking a different position on how to solve the problem of endangered species.

Group 1: Senators who believe the national government has a major responsibility

You believe that the federal government should assume a major role in helping to solve the problem of endangered species. You think the national government should set general policies and provide funds, and local governments should be required to cooperate with the federal programs. You also think that educational institutions should teach methods of saving our wildlife. You are willing to reduce other parts of the budget to pay for the endangered species program.

Group 2: Senators who believe the national government has only a limited responsibility.

You think that the federal government should not take the main responsibility for dealing with the problems of endangered species. You believe that each state should maintain its own ecological balance and that tax money should be spent on other more urgently needed programs rather than on wildlife conservation. You also recognize that hunting and fishing bring considerable income to certain states. You feel that if the federal government made policies concerning wildlife preservation, it would hurt those states that depend on income from hunting and fishing.

Group 3: Senators who favor a compromise

You agree with parts of each of the other two groups' positions. You think the states should act to protect their wildlife. On the other hand, you feel the federal government should play a more active role. For example, you believe that federal laws are needed to prevent the sale of wild animal products (such as fur coats) that require the death of the animal. You also think that both the federal and state governments should share the responsibility and the cost of protecting wildlife.

Developing a Bill

Each group should begin by selecting a spokesperson and a recorder. Then each group should develop a bill that represents its position on how to solve the problem of endangered species. The bill should be evaluated by developing answers to the following questions.

What is the purpose of your bill?

Do you think there are better ways than making a law to achieve the purpose? Explain.

What effects would you expect your bill to have if it became law?

What are the strengths and weaknesses of your bill?

Why do you think your bill should be passed?

Directions for a Senate Debate

1. The class should select a person to serve as president of the Senate who will chair the proceedings.

2. Each group will have three minutes to present its bill to the Senate. After each presentation, other senators may question or criticize the bill presented. Members of the group creating the bill may respond to these criticisms.

3. Each group may then amend its bill, if necessary, to win votes, or a compromise bill may be developed and presented.

4. After debate has been completed, the Senate should vote on the bills before it. The following questions should be considered when voting.

   What is the purpose of each bill?

   What would be the effects of each bill if it were passed?

   What are the strengths and weaknesses of each bill?

Using the Lesson

1. Did you agree with the class decision? Why or why not? Write a short essay in your journal describing your reaction to the Senate debate and vote. Discuss your views as to what type of law would best deal with the problem of endangered species.

2. Choose a bill that is presently before your state legislature or that is being considered in Congress. Evaluate the proposed legislation in terms of the criteria used in this lesson. Write a letter to your representative urging that he or she support your position on the bill.

9. Your Piece of the PIE II

Purpose: **You will develop an awareness of the unequal distribution of the Earth's natural resources and the wealth of nations.**

Divide your class into three groups. The size of each group will be different because it is based on population. To figure out the number of students in each group--here's a chance to practice your math--calculate the following percentages. (Total number of students in class multiplied by the percentage listed will equal the number in the group.)

Group 1 - The First World = 17% of the world (class)

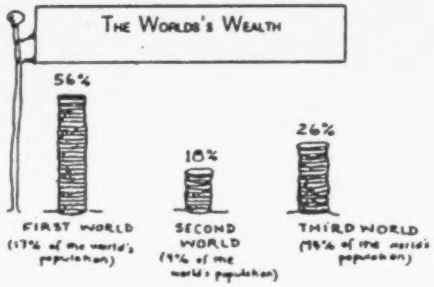
Group 2 - The Second World = 9% of the world

Group 3 - The Third World = 74% of the world

* * *

Now, distribute a share of the world's wealth to each of the "worlds."

Start with 100 total items (stickers, popcorn, peanuts, etc.)



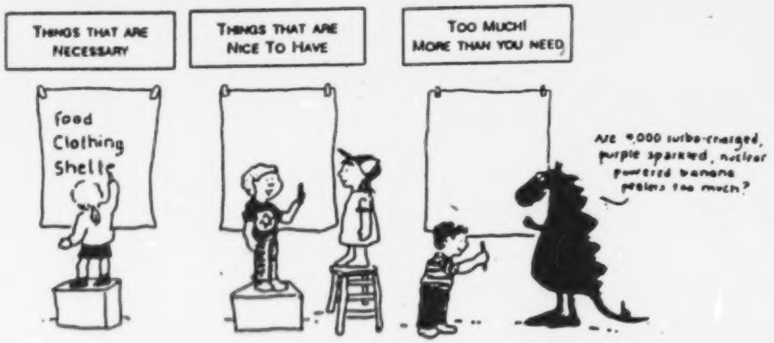
1. Give "The First World" group 56 since 56% of the world's wealth is owned by the First World. "The Second World" group will get 18; it holds 18% of the wealth,—and the "Third World," 26 which equals the percentage of the world's wealth in its control.

2. Within each group, figure out how many of the items each person will get and distribute the appropriate number of items to each person. Wait until Step 5 before you "consume" the items which you have just been given.

3. Bring the class together and list on the board the amount of "wealth" one person in each of the three groups has.

4. Discuss how you feel about the portion of the world's wealth your group has. How do you feel about what the others have?

5. Negotiate with the other groups in your class to see if anything can be done to even out the unequal distribution dilemma. You are free to work with one group, both groups, trade, give away, make promises for the next time; in other words, you can make any decision you want. Redistribute the items if that's what your decision calls for. You may then consider the items yours.


THINGS THAT ARE NECESSARY
THINGS THAT ARE NICE TO HAVE
TOO MUCH! MORE THAN YOU NEED
Food
Clothing
Shelte
Are 4,000 turbo-charged, purple sparkled, nuclear powered banana peelers too much?

* * *

Pie in the Sky!

Discuss:

- How was this activity like the real world?
- List examples of countries in each of the three worlds.
- What things are being done to help countries with less than others?
- How does the nature of the physical environment affect the wealth of a nation? List countries with a great wealth of natural resources. Are these countries also the wealthiest in terms of quality of life? Can you think of countries with relatively poorer amounts of resources that are still considered wealthy? What other factors have contributed to their advancement?
- Does having more wealth always mean having a higher quality of life?

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John Muir Day Education Packet
California Department of Education
April 1990

10. Place cutouts or symbols on a map of your city (or county) to locate such public facilities as landfills, water treatment plants, composting plants, oil storage tanks, parks, generating plants, slaughter houses, hazardous waste and other recycling plants, libraries, feedlots, heavy industry, theatres, manufacturing facilities, hospitals, etc. Then add housing (both single family homes and multiple dwelling units) to the map. Study the completed map and discuss questions such as:

    - In or near which neighborhoods of your community are each of the different facilities found?
    - What are the ethnic and socio-economic characteristics of residents in each of these different neighborhoods? How does the value of land compare in each location?
    - How is the location of the various facilities determined?
    - What does the term, "environmental justice" mean? Are there examples of environmental injustice in your community? If so, is anything being done about it? Is any legislation, local or national, pending to prevent environmental injustice?

    If there is a current problem concerning the location of a public facility in your community, set up a role playing situation in your class. Assign such roles as county or city commissioner and/or other elected officials, planning department director, business person, neighborhood association representative, local senior citizen, local youngster, local adult, and Sierra Club or other environmental activist. Also, assign roles as media representatives such as newspaper, radio and television reporters. Conduct a simulated public hearing. If the class comes to any conclusions as a result of this activity, write a letter to the county or city commission or to the editor of the local paper.

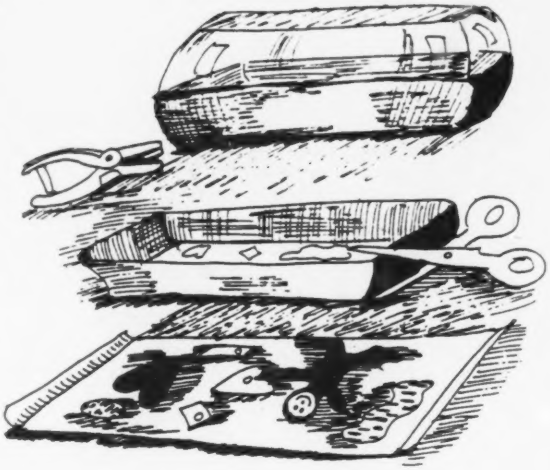
11. Conduct a forum at your school at which students will have an opportunity to discuss their reactions to the outcomes of the Rio de Janeiro Earth Summit conference. Focus specifically on how the conference addressed the complex and interrelated problems of population, endangered species, habitat destruction, and the inequities between the "have" and the "have not" nations.

ARTS AND CRAFTS

SHRINKERS

MATERIALS:

plastic lids or salad bar plastic containers
permanent marking pens
hole punch
yarn or paper clip
cookie sheet
aluminum foil
spatula
275° oven



PROCESS:

1. Preheat oven to 275°.
2. Pre-cut plastic shapes or draw directly on uncut plastic. Uncut designs will be unusual and lumpy. Cut plastic will lay flatter.
3. Punch two holes touching each other to make one large hole in each shape.
4. Color with pens on plastic.
5. Place plastic on foil-covered cookie sheet. Then place in oven. (Hint: If plastic curls too much, use a cooler oven.)
6. When plastic is shrunken, flat, and thick, remove from oven and press with spatula.
7. Cool.
8. Insert yarn or paper clip for hanging.

VARIATIONS:

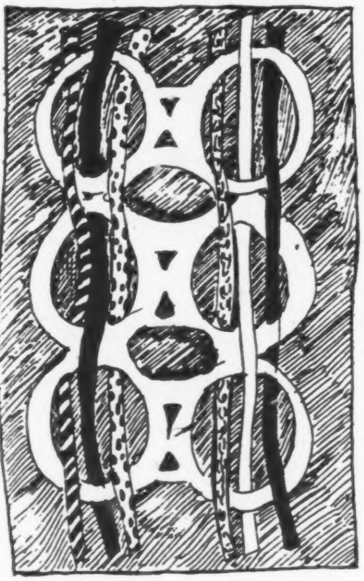
1. Before shrinking, outline edge of drawing with felt pen for a framed look.
2. Make a charm bracelet with many designs attached.
3. Good for holiday ornaments.

WARNING:

Work in a well-ventilated area.

When consulted about possible dangers involving gases from this project, environmental authorities advised that merely melting the plastic and thereby shrinking it was not harmful. However, burning the plastic or styrofoam releases gases into the atmosphere which are harmful to the ozone layer. Recycling this project as art is a good use for left over styrofoam and plastic as long as the products are not burned.

SIX PACK RING WEAVING



MATERIALS:

plastic six pack rings
paper
poster board or tag
scissors
stapler
staples

PROCESS:

1. Cut paper into strips.
2. Starting on the short side of the six pack rings, slide strip through rings going ***under*** one ring, ***over*** the next, and ***under*** again.
3. Slide another strip next to the first one. This time go ***over*** one ring and ***under*** the next, then ***over*** again.
4. Place other strips over and under the rings. Feel free to weave a random or planned design.
5. Repeat the weaving process until the six pack ring is filled.
6. Staple weaving onto a poster board or tag background and display.

VARIATIONS:

1. Weave yarn, feathers, straws, or other items.
2. Join six pack weavings to form a large weaving. Use string, tape, yarn, or stapler to join.

The above activities and illustrations from ***Good Earth Art: Environmental Art for Kids***, by Mary Ann F. Koh and Cindy Gainer, Bright Ring Publishing, Bellingham, WA 98227.

"When we try to pick out anything by itself, we find it hitched to everything else in the universe."

—John Muir, 1869

"One day's exposure to mountains is better than cartloads of books."

—John Muir, 1872

SECTION D

Life Style Action Calendar

"Civilizations leave marks on the earth by which they are known and judged. In large measure the nature of their immortality is gauged by how well their builders made peace with the environment."

Nathaniel Alexander Owings

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LIFE STYLE ACTION CALENDAR

The following calendar was prepared for general use in connection with Earth Day, April 1990. You may want to use it as a model for a class project. The students could put together a similar calendar for any month--or for every month--and share it with parents and schoolmates. Use the school newspaper or the morning announcements as a vehicle for getting out the message.

If the students run out of ideas for daily helpful hints, they might borrow some from the list below. Some of the more important "Tips" could be repeated in different months to assure having them become habits.

LIFE STYLE TIPS

1. Buy soda in six-packs that use photodegradable plastic yokes.
2. Use outdoor lights only when necessary.
3. Stop using the toilet as a wastebasket.
4. Use vinegar or baking soda with water instead of ammonia-based cleaners.
5. Air dry laundry when possible instead of using the electric dryer.
6. Don't open the refrigerator or freezer door more than is necessary.
7. Keep refrigerator and freezer at proper temperatures.
8. Use hand operated tools instead of electric tools and appliances when possible.
9. Use rechargeable batteries.
10. Buy recycled paper.
11. Use cold water for household tasks whenever possible.
12. Take baths sometimes instead of showers.
13. Adjust lawn sprinklers so they water vegetation, not sidewalks.
14. Don't run the hose while washing your car. Spray to wet and to rinse.
15. Add 1/2 cup vinegar in rinse cycle of washing machine instead of anti-static commercial products.
16. Buy eggs and milk in cardboard cartons, not plastic.
17. Reuse aluminum foil, plastic wrap and bread wrappers.
18. Keep your garden clippings for mulch for your plant beds and around trees.
19. Use the correct amount of detergent in your washing machine.
20. Don't litter.
21. Dress properly for the temperature to avoid needing indoor heating or air conditioning.
22. Use a litter bag in your car.
23. Use fluorescent lighting rather than incandescent bulbs.
24. Don't buy aerosol spray cans that use chlorofluorocarbons.
25. Avoid excessive use of your car air conditioner.
26. Keep your automobile engine properly tuned.
27. Save gas by driving at recommended speed limits.
28. Use radial tires to improve efficiency.
29. Dispose of old tires properly.
30. Use high quality oil in your car to improve fuel efficiency.
31. To prevent spillage when gassing up, don't top it off.

32. "Let your fingers do the walking" when shopping for a new purchase.
33. Adopt an old adage, "Use it up, wear it out; make it do, or do without."
34. Trade toys, games, sports equipment, etc. with classmates.
35. Make gifts for the family from odds and ends.
36. Add houseplants to your rooms. They give oxygen and help purify the air.
37. Write on both sides of the page.
38. Avoid running water to wash vegetables and rinse dishes.
39. Water lawns and gardens slowly, deeply and infrequently to encourage deep rooting.
40. Keep grass at least 2 inches high to shade roots.
41. Photocopy on two sides.
42. Purchase products in recyclable containers (aluminum, steel, glass, paper, cardboard).
43. Make things last by taking care of them, mending them and repairing broken appliances.
44. Look for the recycling symbol (three-arrows forming a circle) when shopping.
45. Reduce the amount of junk mail you receive by writing: Direct Marketing Associates, 6 East 43rd Street, New York, NY 10017.
46. Wash clothes in cold water.
47. Avoid "drive-through" lines where you will have to idle your car for a long time.

YOUR LIFESTYLE ACTION CALENDAR

Make These Lifestyle Tips a Year-Round Habit. Keep Adding to Them to Preserve Our Environment.

We now know that each of us can be, and must be, part of the solution, that our lifestyle and habits directly affect environmental quality. We've also learned that local, national and global problems are interrelated, that personal and community action can help resolve them, and that our own behavior patterns can provide solutions to both local and global pollutions. Let's all THINK GLOBALLY, ACT LOCALLY.

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 Water lawns in early morning or late afternoon	2 Turn off lights, TV's, radios, etc when they are not needed	3 **Carpool to work and school**	4 Recycle newspapers, glass, aluminum cans	5 Turn off water while brushing teeth	6 Take a shopping bag to bring home groceries from the supermarket	7 Combine short errands involving your car (cleaners, beauty parlor, veterinarian)
8 Try a vegetarian meal	9 **Turn faucets completely off**	10 Take the bus to work	11 Wash full loads of dishes and clothes	12 "Adopt" a street tree	13 Dispose of household hazardous waste appropriately	14 Walk or bike whenever possible
15 Avoid using pesticides	16 Use a mug for your coffee instead of a styrofoam cup	17 Keep thermostat of heater at 68-70°, or air conditioner at 78-80°	18 Equip your toilet with a water conserving device. Don't use toilet to dispose of things	19 Take short showers	20 Use handkerchiefs and cloth diapers instead of disposables	21 Use paper cups instead of styrofoam for picnics
22 Reflect on your habits as a consumer	23 Use washcloths instead of paper towels	24 Plant a tree or shrub	25 Think twice before throwing things away	26 Do your grocery shopping once a week	27 Compost fruit and vegetable scraps as well as grass clippings	28 Recycle used motor oil
29 Write to manufacturers and retail businesses protesting over-packaged products	30 Don't burn leaves or trash					

SECTION E

Environmental Word Games

SCRAMBLED MESSAGES

Here are nine words about air quality or transportation. Unscramble the letters to find out what these words are, then read the circled letters to find the secret message.

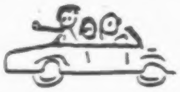
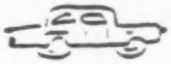
	SCRAMBLED WORDS	AIR QUALITY/TRANSPORTATION WORDS
1.	bconra doinemxo	- - ○ - - - - - - - - - -
2.	sesimsoni	- - - - - ○ - - -
3.	vredri	○ - - - - -
4.	tnenrivomne	- - - - - - - - ○ - -
5.	gmos	○ - - -
6.	abosyrdnochr	○ - - - - - - - - - - -
7.	opalvno	- ○ - - - - -
8.	snoervini	- - - - ○ - - - -
9.	nngiee	- - - - - ○

SECRET MESSAGE _ _ _ _ _ _ _ _ _

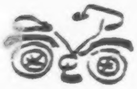
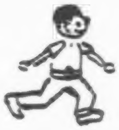
Answers: (1) carbon dioxide (2) emissions (3) driver (4) environment (5) smog (6) hydrocarbons (7) vanpool (8) inversion (9) engine
Secret message: RIDESHARE

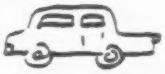
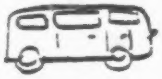
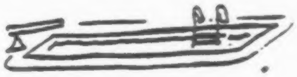
PICTURE PUZZLES

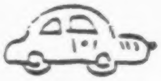
Here are six picture puzzles, each containing an air quality or transportation tip. The example shows you how to solve the puzzle.

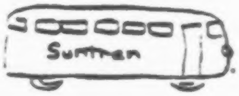
EXAMPLE: Cheaper by the  load--  ing.

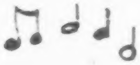
Cheaper by the Carload - - - - - - Carpooling

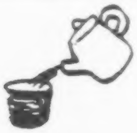
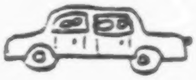
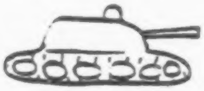
1.  or  whenever practical.

2. Join a  or a  

3. Keep your  engine clean.

4. Ride the .

5.  ↑ 4 clean air.

6.  your  instead of your .

Answers: (1) Bike or walk whenever practical. (2) Join a car or a van pool. (3) Keep your car engine clean. (4) Ride the bus. (5) Tune up for clean air. (6) Fill you car instead of your tank.

HIDDEN WORDS

There are sixteen words or phrases about air quality and transportation hidden in the letters below. How many of them can you find? Circle them. One has been done for you.

C A T V R I X B C F O Q W E V M E C S T P O

P A R T I C U L A T E S A M R V X A U T O F

C L E A N A I R G C O P X I A T A R N S L U

N G W P V B S O Y T Z D U S T U C P C A L P

L Z R A E M M H R X O D T S Y N W O D S U T

B K C A R B O N M O N O X I D E U O K L T P

C E B U S W G A S X E A Q O J U Z L M U I F

C A E D I S E A S E G H L N V P R I A D O X

H Y D R O C A R B O N S X S F E J N W Y N R

M A V A N P O O L B X L W A D J H G L W A C

Use these words to write a story about air pollution.

Answers: particulate, clean air, carbon monoxide, gas, hydrocarbons, vanpool, pollution, carpool, emissions, inversion, auto, bus, disease, tar, sun, dust.

HIDDEN WORDS

```
                              P
                            T A X
                          K R P O L
                        S X A E R U M
                      O T A N R L B D N
                    N E K T S H A D E J U
                  C V O T F P S W L O A K V
                T I M O N U I F J R W Q L N T
              L W V A K O E R O S I O N M E R X
            P A K I S O I L A O L H O M E S J B N
          A I R B C E S S T T D X D D U T T K N L S
        N X O L K B E E E R I A T O M O S Y R U P A M
      P S W X T C V D F Q X O C L X R D I X E J X G I L
    L O R T M S R D S L M G N L R F U R N I T U R E B T Y
  C A R B O N D I O X I D E O X Y G E N F H P U D C O N E P
P B C O L T M X A L W P Q B X O F M R S L W A U B C L M N U X
```

Trees help the environment in many ways. Fill in the blanks below to see some of them. All of these words are hidden in the tree at the top of the page. Circle them.

1. Most of the _ _ _ _ _ we use comes from trees.
2. Water is given off by trees in a process called _ _ _ _ _ _ _ _ _ _ _ _ _.
3. The _ _ _ _ _ trees give helps to keep us cool.
4. The lumber from _ _ _ trees is often used to make furniture.
5. Trees are often used by birds for their _ _ _ _.
6. Trees provide _ _ _ _ for building and heating houses.
7. Nuts and fruits from trees are an important source of _ _ _ _.
8. Trees help prevent soil _ _ _ _ _ _ _.
9. Trees help to cut down on _ _ _ _ _ pollution.
10. Decaying logs and leaves enrich the _ _ _ _.
11. Trees remove some pollutants from the _ _ _.
12. The _ _ _ _ _ we use on pancakes comes from trees.
13. Most of our _ _ _ _ _ _ _ _ _ is made from trees.
14. Trees use _ _ _ _ _ _ _ _ _ _ _ _ _.
15. _ _ _ _ _ _ is given off by trees in the process of photosynthesis.
16. The _ _ _ _ of pine trees is a favorite Christmas decoration.

Answers: (1) paper; (2) transpiration; (3) shade; (4) oak; (5) nest; (6) wood; (7) food; (8) erosion; (9) noise; (10) soil; (11) air; (12) syrup; (13) furniture; (14) carbon dioxide; (15) oxygen; (16) cone.

ENVIRONMENTAL TRIVIA

Circle the correct answer:

1) Air pollution from automobiles in the United States is responsible for how much in annual health care expenditures?

a) $40-50 billion b) $85-90 billion c) $70-80 million

2) In North America and Europe, what percentage of the population is exposed to an unhealthy concentration of carbon dioxide?

a) 35% b) 15% c) 50%

3) On average, working Americans spend how many hours a week behind the wheel?

a) 9 b) 4 c) 15

4) During 1988, on how many days did Los Angeles violate federal air standards for ozone levels?

a) 85 b) 172 c) 237

5) Every automobile air conditioner, whether used or not, produces CFCs equivalent to how many pounds of carbon dioxide per year?

a) 4,800 b) 10,000 c) 200

6) In 1969, what was the estimated damage to crops from air pollution in California alone?

a) $100 million b) $40 million c) $600 million

7) In one year, CFC concentration in the Earth's atmosphere increases by what percentage?

a) 1% b) .5% c) 5%

8) In 1952, what city experienced the infamous "Black Fog" that killed thousands of citizens?

a) New York City b) London c) Mexico City

9) What automobile pollutant contributes most to the formation of acid rain in the United States?

a) Lead b) Nitrous Oxide c) Carbon Monoxide

10) In 1985, what percentage of all oil consumed in the United States was used for transportation purposes?

9) What automobile pollutant contributes most to the formation of acid rain in the United States?

a) Lead b) Nitrous Oxide c) Carbon Monoxide

10) In 1985, what percentage of all oil consumed in the United States was used for transportation purposes?

a) 20% b) 85% c) 63%

11) San Diego's light rail system has been rather successful. By how much has its ridership increased each year since 1983?

a) 12% b) 22% c) 30%

12) In some areas of the United States, where ground-level ozone levels are the highest, marketable volume of 30-year-old pine trees has decreased by how much since 1940?

a) 83% b) 12% c) 35%

13) China and India together account for 38% of the world's population; what percentage of the world's automobiles do they account for?

a) 10% b) 5% c) .5%

14) As of 1985, a liberal estimate for the amount of the world's proven oil reserves, in barrels, was:

a) 3.5 trillion b) 7 trillion c) 20 trillion

15) Electric cars using **coal-produced power** would most likely affect sulfur oxide emissions in what way?

a) a 20% decrease b) a 90% decrease c) a 20% increase

16) When was the world's first oil well drilled?

a) 1859 b) 1800 c) 1776

Answer key: (1) a; (2) c; (3) a; (4) b; (5) a; (6) a; (7) c (8) b; (9) b; (10) c; (11) a; (12) a; (13) c; (14) a; (15) c; (16) a

Source: Ridepool, Albuquerque, NM

GEO-PARDY (JEOPARDY)

OBJECTIVE: To familiarize young people with a diversity of basic environmental concepts and terms in a relaxed, fun manner.

AGES: 10 to 14 years old.

This activity is an adaptation of the T.V. game show Jeopardy. Like the game show, the contestants are given the question or clue in answer form and are requested to respond by phrasing the answer in a question (e.g., what is...?). A group of students may be divided into two or more groups to play the activity. The only materials needed are a sheet of paper to keep score and posterboard for categories.

POINTS

CATEGORIES				
A	B	C	D	E
5	5	5	5	5
10	10	10	10	10
15	15	15	15	15
20	20	20	20	20
25	25	25	25	25
*10	*10	*10	*10	*10

The duration of the game depends on how much time the instructor allows for discussion of individual questions.

CATEGORY TITLE: Connections
TOPIC: Linking Nature Together

POINTS		
5	Question:	The transfer of food energy in sequence from plants to animals that eat plants to animals that eat other animals.
	Answer:	What is the food chain?
10	Question:	A network of interconnected food chains within a community.
	Answer:	What is a food web?
15	Question:	A place providing food, water, shelter, adequate space; an animal's home.
	Answer:	What is a habitat?
20	Question:	The process of letting living organisms "eat" organic matter (yard litter, fruit peels) which turns the matter into a rich soil.

Answer: What is composting?

25 Question: The act of decaying, the last stage of the life cycle.
Answer: What is decomposition?

2bonus 10 Question: Producers -> consumers -> decomposers
Answer: What makes up the lifecycle?

CATEGORY TITLE: Green Definitions
TOPIC: Common Environmental Terms

POINTS

5 Question: The study of the relationships of organisms in the environment.
Answer: What is ecology?

10 Question: All living things and their environment in an area of any size, linked together by energy and nutrient flow.
Answer: What is an ecosystem?

15 Question: A layer of gas protecting us from the sun's harmful radiation and being depleted by human-made gases.
Answer: What is the ozone layer?

20 Question: The gases which are contributing to the depletion of the ozone layer and which are commonly found in refrigerators, air conditioners, aerosol sprays, and styrofoam.
Answer: What are CFC's (chlorofluorocarbons)

25 Question: The theory that states the earth's temperature is rising due to an abundance of gases being released into the atmosphere and trapping the sun's heat.
Answer: What is the greenhouse effect?

Bonus 10 Question: The method of logging which allows the cutting of every tree in a designated area.
Answer: What is clearcutting?

CATEGORY TITLE: Toxins
THEME: Toxic Materials and Waste

POINTS

5 Question: The name given to chemicals sprayed on plants to rid them of "pests."
Answer: What is a pesticide?

10	Question:	Until the 1970's this was the most commonly used pesticide which led to the near extinction of bald eagles and peregrine falcons. This pesticide is now banned in the United States because of its lethal effects on wildlife and human populations.
	Answer:	What is DDT?
15	Question:	Food that is grown naturally, without the use of pesticides or other chemicals.
	Answer:	What is organic food?
20	Question:	Carbon dioxide, nitrogen oxide, methane, and CFC's are all gases that are contributing to ________________________.
	Answer:	What are greenhouse gases/what is the greenhouse effect?
25	Question:	All-purpose cleaners, detergents, old batteries, and paint.
	Answer:	What is common household hazardous waste?
bonus 10	Question:	A cancer-causing toxin that is produced as a by-product during the bleaching process of paper.
	Answer:	What are dioxins?

CATEGORY TITLE: Once Is Not Enough
THEME: Recycling

POINTS		
5	Question:	Reusing materials to create/make another product.
	Answer:	What is recycling?
10	Question:	Recyclers refer to these terms as the 3R's.
	Answer:	What are reduce - reuse - recycle?
15	Question:	These three objects are the most commonly recycled products.
	Answer:	What are glass, newspaper and aluminum.
20	Question:	The material that is commonly used by fast food companies which is completely non-biodegradable and doesn't even break down after 500 years.
	Answer:	What is styrofoam (polystyrene foam)?
25	Question:	Two places where your garbage ends up.
	Answer:	What are landfills and incinerators?
Bonus 10	Question:	The material most commonly found in landfills.
	Answer:	What is organic matter?

CATEGORY TITLE: Here Today . . .
THEME: Endangered Species

POINTS		
5	Question:	A condition of having been removed from existence.
	Answer:	What is extinction?
10	Question:	A law that was created in 1973 to protect both plant and animal species from going extinct. It has been one of the most powerful conservation laws to date.
	Answer:	What is the Endangered Species Act?
15	Question:	The illegal trapping, hunting or killing of any plant or animal.
	Answer:	What is poaching?
20	Question:	I am one of the few predators that can hunt and kill large-hoofed animals, such as moose. I am very social and family oriented. I am endangered in most of the United States but currently there is talk about reintroducing my species in areas where my population is low.
	Answer:	What is a wolf?
25	Question:	The ecosystems with the most variety of plant and animal species.
	Answer:	What is the rainforest?
Bonus 10	Question:	The number of plant and animal species that go extinct every hour.
	Answer:	What are 20 species an hour?

"Jeopardy" developed by and used with permission of Danielle Gothie, Environmental Specialist, 1991 Albuquerque YWCA Summer Camp.

SECTION F

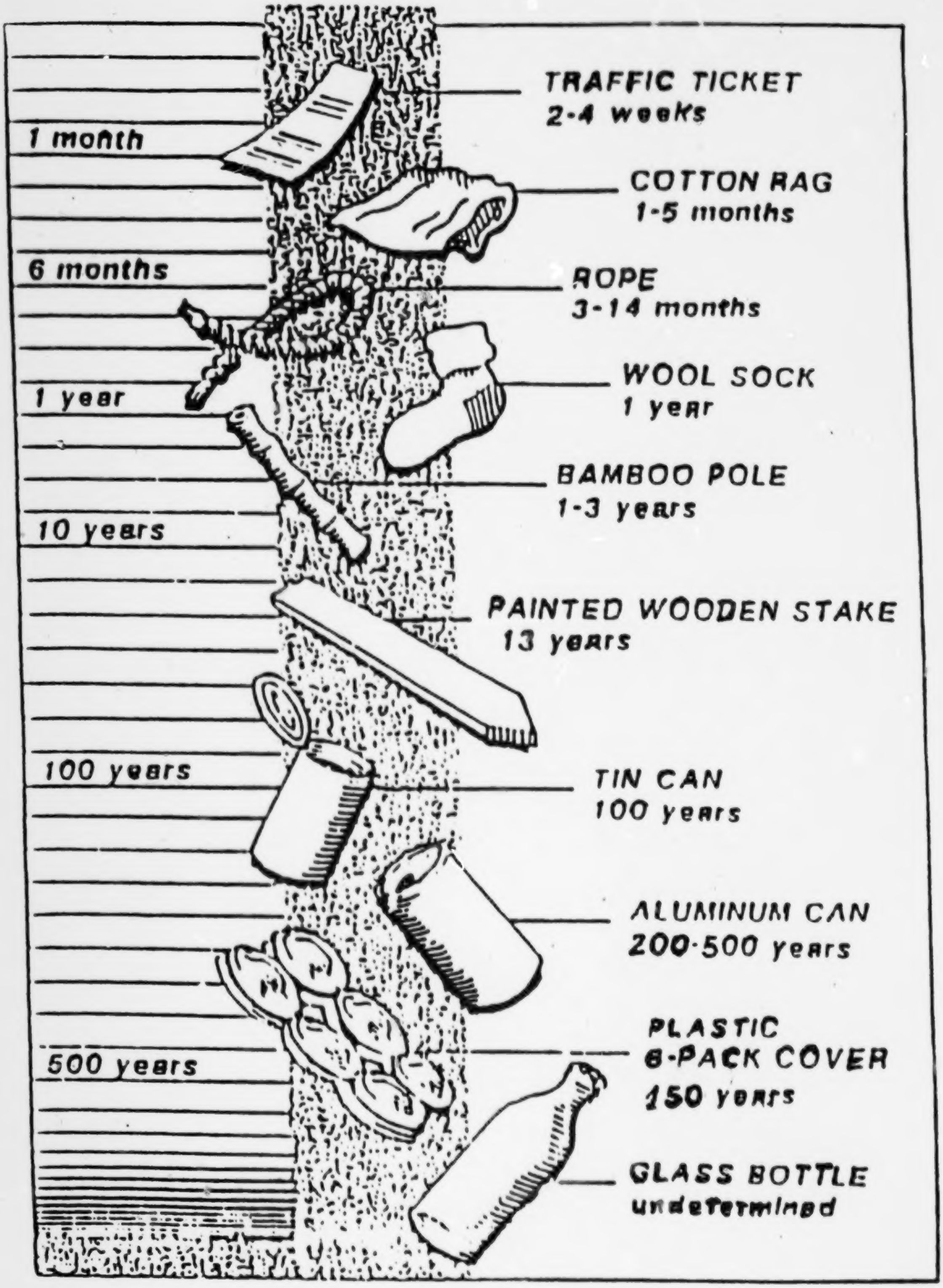
Ideas for Environmental Bulletin Boards

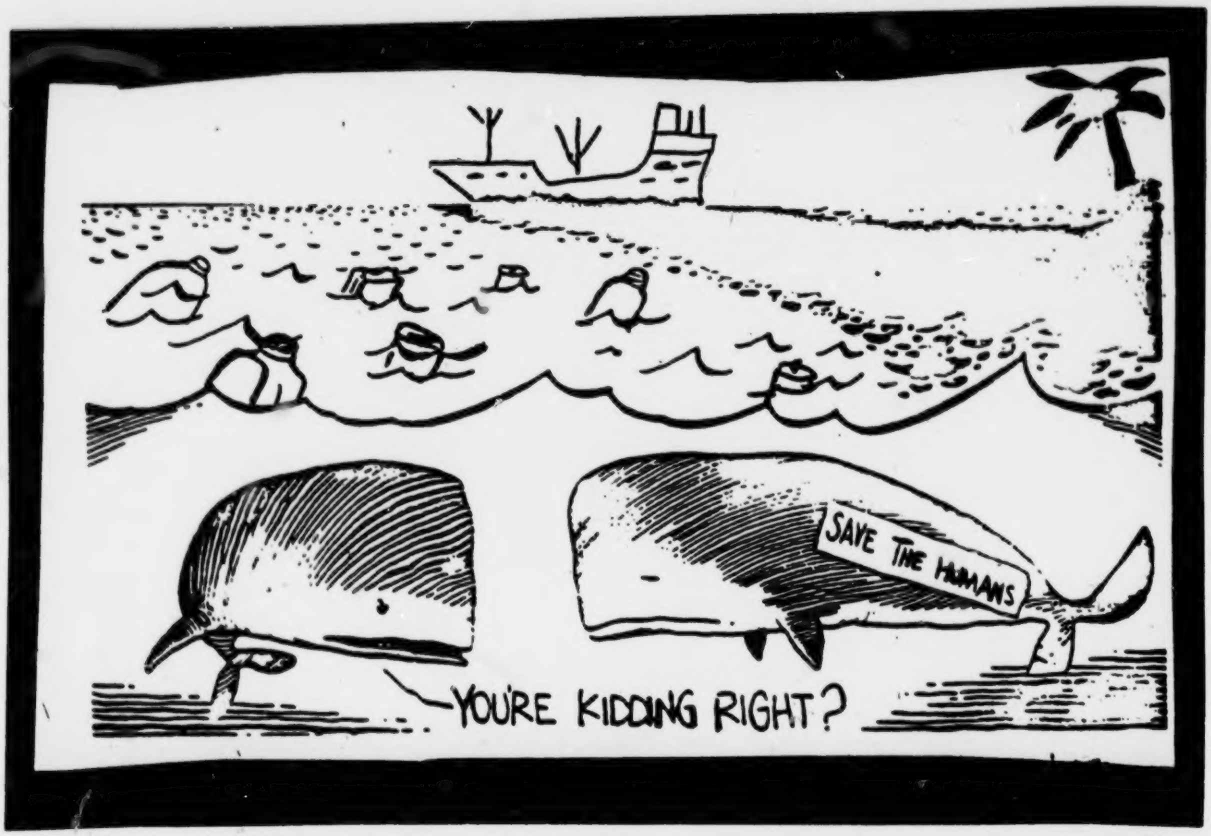
Classroom or corridor bulletin boards are an effective way to get messages across to the rest of the school. Try some of the following ideas, or adapt them for your own purposes.

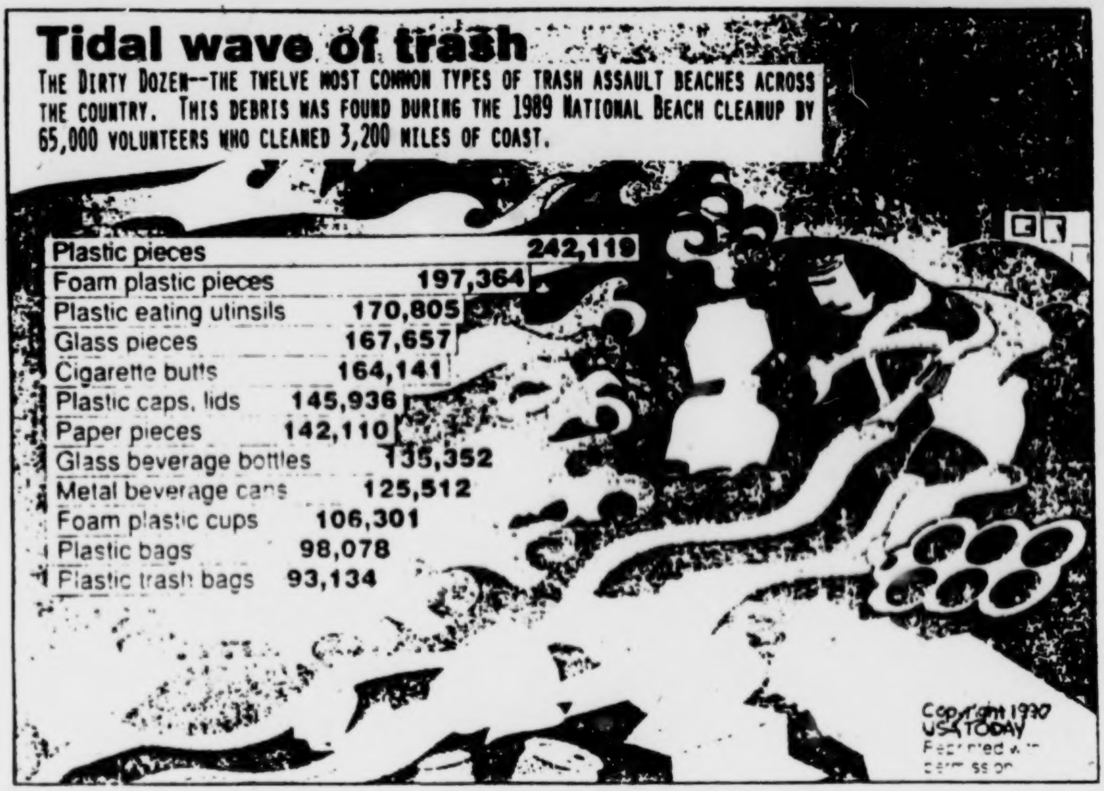
If you have developed successful bulletin board ideas for your environmental lessons, please send them in. We will try to include them in the 1993 update of *The TEAM Notebook*.

LITTER LASTS

HOW LONG DOES IT LAST BEFORE IT DECAYS?




SAVE THE HUMANS
YOU'RE KIDDING RIGHT?



Tidal wave of trash

THE DIRTY DOZEN--THE TWELVE MOST COMMON TYPES OF TRASH ASSAULT BEACHES ACROSS THE COUNTRY. THIS DEBRIS WAS FOUND DURING THE 1989 NATIONAL BEACH CLEANUP BY 65,000 VOLUNTEERS WHO CLEANED 3,200 MILES OF COAST.

Plastic pieces	242,119
Foam plastic pieces	197,364
Plastic eating utinsils	170,805
Glass pieces	167,657
Cigarette butts	164,141
Plastic caps, lids	145,936
Paper pieces	142,110
Glass beverage bottles	135,352
Metal beverage cans	125,512
Foam plastic cups	106,301
Plastic bags	98,078
Plastic trash bags	93,134

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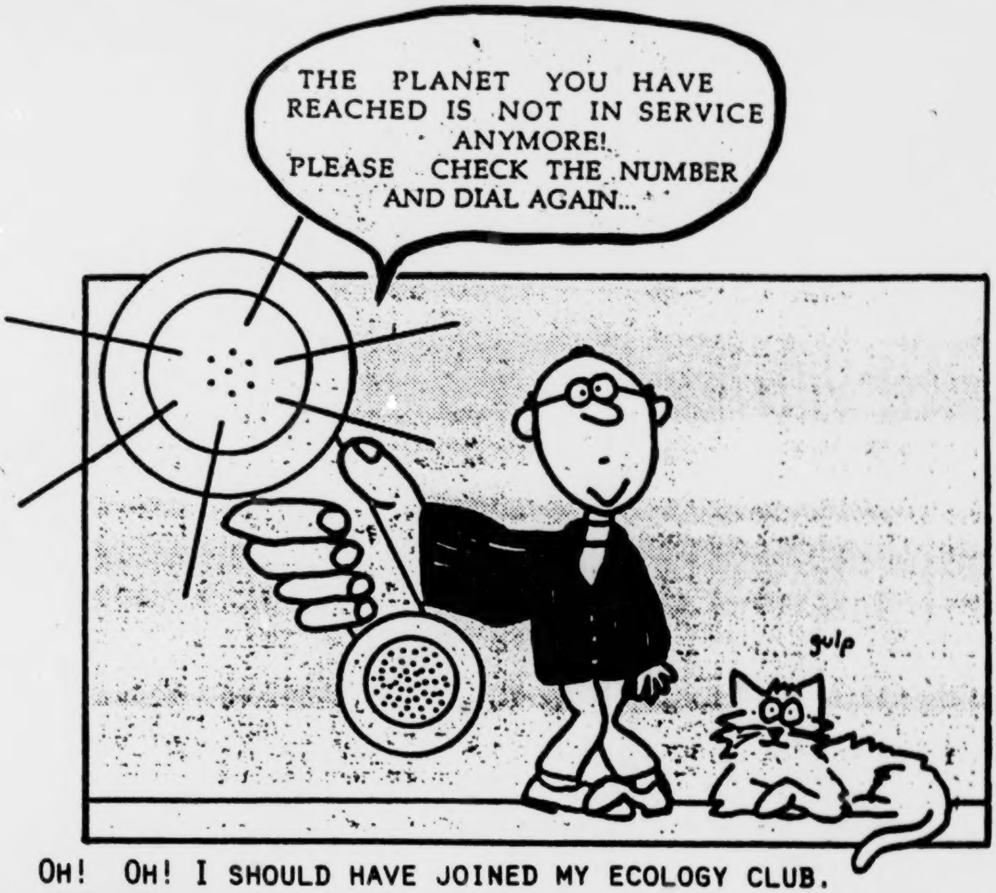
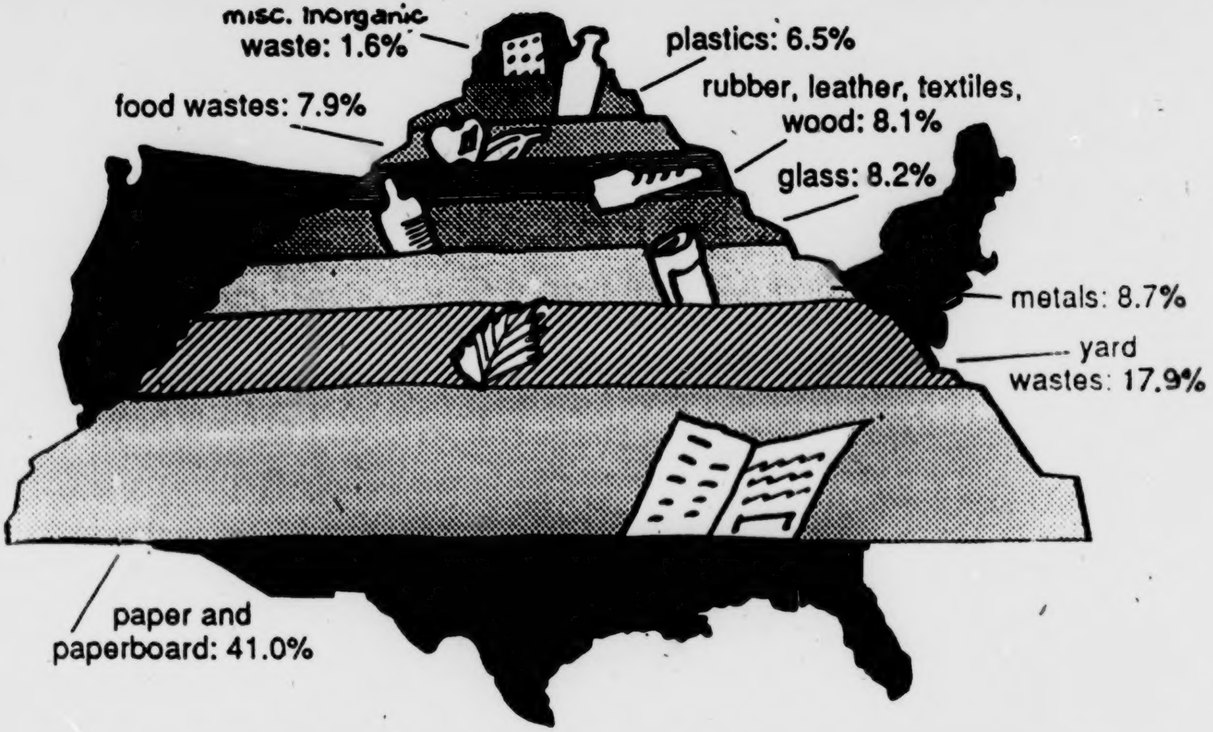

THE PLANET YOU HAVE REACHED IS NOT IN SERVICE ANYMORE! PLEASE CHECK THE NUMBER AND DIAL AGAIN...
gulp

OH! OH! I SHOULD HAVE JOINED MY ECOLOGY CLUB.

BEST COPY AVAILABLE



How the trash stacks up. *Components of U.S. municipal solid waste. Source: Franklin Associates, 1988.* ART BY ROBBIN GOURLEY

How Long Will Litter Last?

Cigarette butts	1-5 years
Aluminum cans and tabs	500 years
Glass bottles	1,000 years
Plastic bags	10-20 years
Plastic coated paper	5 years
Plastic film containers	20-30 years
Nylon fabric	30-40 years
Leather	up to 50 years
Wool sox	1-5 years
Orange and banana peels	up to 2 years
Tin cans	50 years
Plastic six-pac holders	100 years
Plastic bottles and styrofoam	indefinitely

Please Don't!

SECTION G

Teachers and Environmental Education Activists Network

Young Environmental Activists (YEA) all over the country are doing exciting and valuable things either in their classes, school ecology clubs, or clubs sponsored by other organizations. This section of *The TEAM Notebook* will provide an opportunity for an exchange of ideas and programs that "worked." Some of the items listed here were submitted to *Sierra***ecology** following Earth Day '90. Others were done in the post Earth Day '90 period.

PEOPLE WANT TO KNOW WHAT YOU ARE DOING. PLEASE SEND IN BRIEF ACCOUNTS OF YOUR PROJECTS AND HELP THE NETWORKING EFFORT.

YEA NETWORK

EXHIBITS, ACTIVITIES, AND PROJECTS

JUNIOR HIGH SCHOOL, ROCKY RIVER, OHIO--BARBARA SLANE, LIBRARIAN

- 6th grade classes saw videos and heard a talk by a knowledgeable parent about ecological problems. In groups of four they wrote "raps," which were subsequently video taped and shared with the rest of the school.
- 7th graders created composite fantasy animals designed to cope with the environmental problems besetting our planet today.
- 8th grade honors classes produced informational pamphlets on some aspect of the ecological problems facing us today (global warming, rain forests, toxic wastes, etc.). These pamphlets contained graphs, maps, pictures, resources, etc.

CITY OF NEW BRAUNFELS, PARKS & RECREATION, NEW BRAUNFELS, TEXAS--IRIS HAECKER, RANGER

Earth Day Celebration Activities and Booths:

- Children's Booth--seed planting; bird feeder "make it and take it."
- Edwards Underground Water District--display showing how the aquifer works.
- Composting tips and catalogs with sensible products that are environmentally friendly.
- Safe Household Products and Practices Booth.
- Display of prize-winning high school murals and photographs.

CONSERVATION/FISHERIES DIVISION, TORTOLA, BRITISH VIRGIN ISLANDS--DR. GILLIAN CAMBERS

- Bulletin board displays on environmental topics.
- Environmental exhibition in public library.
- Workshop on environmental action plans for the decade of the 90's.
- BVI High School radio discussions on environmental topics.

CRESCENT JUNIOR HIGH SCHOOL, PLAQUEMINE, LA

- Student skit--"SOS" Save Our Spaceship.
- Questions and answers to "panel of experts"--student conducted experts included elected officials, environmental organizations, federal and state agencies, chemical association, etc.

NORTHEAST OHIO SIERRA CLUB YOUNG ENVIRONMENTAL ACTIVISTS--JUDY FINK, ADVISOR

- Explained, via a booth at Cat Fanciers Show, the dangers of pesticides to pets.
- Participated in a study program sponsored by Union of Concerned Scientists and Sierra Club focusing on global warming. Made presentations at their schools.
- Participated in International Rainforest Week. Made presentation to Sierra Club about rainforest concerns. Conducted an extensive letter writing campaign. Sponsored lecture at a local library. Presented programs in several schools.
- Visited an organic farm. Several students later worked on this farm. Wrote letters to major supermarkets in area urging that they stock organic foods.
- Assisted with distribution of educational brochure encouraging chemical-free lawns.
- Included in fund raising drive the sale of "Rainforest Crunch" and buttons with environmental messages.

SIERRA CLUB MIAMI GROUP'S YOUNG ENVIRONMENTAL ACTIVISTS--PAT SUITER, ADVISOR

(The Club presented "Green Awards" to students for their programs.)

- Michael Barrow, a junior,
    - Organized students to write essays and to make posters and room decorations,
    - Led various school clubs in raising money to plant native trees on school grounds and to adopt a manatee.
    - Conducted a school-wide recycling program.
    - Organized participation in a national beach cleanup.
- Fanny Fiero, a junior,
    - Organized a campaign for letter writing to legislators.
    - Conducted a school-wide recycling campaign.
    - Supported a manatee adoption program.
- Carlos Dedesma, a senior,
    - Used phone trees, letters, and posters to move students to attend demonstrations.
    - Wrote letters to government officials.
    - Led campaign to remove exotic plants.
    - Participated in anti-junk mail campaign.

LAFAYETTE REGIONAL SCHOOL, FRANCONIA, NH--HAROLD TUTTLE, SCIENCE TEACHER

- 6th grade class organized GREENKIDS, and published a newsletter four times a year.
- GREENKIDS conducted a recycling survey in the local community and discovered that 80% of those questioned do recycle, 32% compost; 8% used to do one or the other; and only 6% did nothing.
- The group visited a composting expert, contacted the school custodian and cook to get permission to start composting at school, and has been operating a successful composting program this year.
- GREENKIDS helped to save the Rain Forests by saving money to buy some land.

DOLORES GONZALES ELEMENTARY SCHOOL, ALBUQUERQUE, NM--CAROL SINOR, TEACHER

Students in a fifth grade class, as participants of the community "Wild Friends" program, learned about various concepts in wildlife protection and management. They:

- Interviewed their state representatives about their positions on issues such as endangered species protection, habitat loss, recycling, and other matters that impact wildlife.
- Worked with a state representative who taught them what must go into a legislative bill, and how a bill gets passed.
- With the help of their teacher and the representative, drafted an actual legislative memorial expressing support for endangered species government programs.
- Introduced the memorial during the New Mexico legislative session, and went to Santa Fe twice to testify before committees in support of the bill; came prepared to answer any questions or objections to their bill and learned to speak clearly and briefly to committees and to the press.
- Learned how to write to their own legislators requesting support for their cause.

SCHOOLS AND ENVIRONMENTAL EDUCATION CONFERENCES

Several very successful conferences and forums conducted for, and often by, students have come to Sierra Club's attention. They should be shared with *TEAM* readers who might want to adapt them for their own use, or who may have been involved with similar projects which could be included in supplements to this notebook.

BRISCOE MIDDLE SCHOOL, IPSWICH HIGH SCHOOL, BEVERLY HIGH SCHOOL AND IPSWICH MIDDLE SCHOOL, BEVERLY, MA--CARMEL VALIANTI-SMITH, CONTACT PERSON.

- Environmental clubs in these four secondary schools have conducted a "Help Save the Environment" conference annually since 1989.
- The conferences have addressed environmental problems and issues of local and global concern. Such topics as polluted waterways in Eastern Europe, wetlands protection, and acid rain were included in the 1992 conference.
- Major environmental organizations have presented exhibits and workshops, and speakers from all over the world have been on the program.

DADE COUNTY PUBLIC SCHOOLS, MIAMI, FL, DEPARTMENT OF COMMUNITY PARTICIPATION--RAMONA FRISCHMAN, CONTACT PERSON

- A "Contemporary Issues In Science" (CIIS) program has been conducted in four to six secondary schools (both middle schools and high schools) annually since 1990. More than six teachers and 200 students have participated in this program each year.
- C.I.I.S. extends over four months and includes class lessons, guest speakers, field trips, student research papers and a culminating Forum conducted by the students and attended by 30-40 adult experts in the fields studied. Students and adults meet together in small break-out groups to develop items for an Action Agenda related to the problems under consideration. Topics addressed in 1991 and 1992 included: "Alternative Sources of Energy"; "Solid Waste Management"; and "Marine and Fresh Water Resources." All of these are local Dade County issues.
- In 1992 the students prepared a Position Paper based on their deliberations at the Forum, and presented it to the Dade County Commission at a monthly meeting.

NEW YORK CITY ENVIRONMENTAL EDUCATION ADVISORY COUNCIL (EEAC)--RUTH EILENBERG, CONTACT PERSON

- EEAC sponsored a Youth Congress in celebration of Earth Day 1990. At that time specially qualified and interested high school students from the Greater New York Metropolitan area were selected to participate in a two-day conference focused on local environmental problems.
- Following the conference several students worked for many months to summarize the discussions which had taken place during the two-day event, and they crafted the document, "An Agenda for Action." This Agenda was presented to the Commissioner of New York City's Natural Resources Agency who responded, in writing, item by item to the points raised. During the months that followed both the City and the students worked to try to solve some of the problems raised in the document.

- Currently, EEAC and students from the Youth Congress are working on developing a Conference Planning Manual which can be useful to other communities interested in planning a Youth Congress. *TEAM* will alert its readers when this new document is ready for distribution.

YWCA PIÑON CANYON CENTER, ALBUQUERQUE, NM--LYNN ROSNER, CONTACT PERSON

- The YWCA set up a Youth Congress in spring of 1990 to celebrate Earth Day. Approximately 300 students from 12 high schools in Bernalillo County were involved in this program which extended over four months.
- The program was initiated by a series of four workshops at which one of four topics was discussed: atmosphere, hydrosphere, lithosphere and biosphere. Each class selected one workshop to attend and subsequently concentrated their studies on that subject. These workshops took place in February.
- Keynote addresses at each workshop were presented by experts in the field, and covered both local and global aspects of the problem. Following this introductory talk, students met in small break-out groups with adult resource persons and facilitators to discuss the local implications of the "sphere" under consideration.
- The classes spent the month of March in doing research, taking field trips and having science and social studies lessons related to their topic.
- Two weeks prior to Earth Day, delegates selected by the students to represent them at a conference at Piñon Canyon Center met for an intensive two-day session with local experts in each of the four topics and with adult facilitators. The task at hand was to develop a Youth Congress Position Paper related to Albuquerque's environmental problems.
- Outcomes of the Congress were:
  - A presentation of their "position" by the students at Albuquerque's Earth Day Town Meeting in the City Council Chambers;
  - Establishment of SEE--Students for Environmental Education;
  - Testimony by SEE representatives at an Air Quality Congressional Hearing held in Albuquerque;
  - Lessons developed by members of SEE, and presented to younger students in local schools and at city-wide environmental events;
  - Participation by SEE members in environmental education workshops, conferences and post-Earth Day happenings.

EDUCATION NETWORK:

• Ken Baxter, Advisor
Beall H.S. Ecology Club
Eckhart Flat
Frostburg, MD 21532

• Joyce Cox, Teacher
Caldwell County Elementary
201 Short Street
Princeton, KY 42445
502-365-5150

• Heather Hypes
Old St. Pat's
700 W. Adams
Chicago, IL 60661

• Justin Oeltjen,
(Student Activist)
6054 Miller Lanina
Tallahassee, FL 32312
904-668-7281

• Pam Gingold
Northern California
Homeschool Association
3345 Santa Paula Drive
Concord, CA 94518

• Dave Brewer, Advisor
Mendota High School
302 16th Avenue
Mendota, IL 61342
815-539-7446

• Michaela de Liuda-Oleson
PO Box 42 GMLNC
Fairfield, VT 05455

• Angela Cianfrani,
Environmental Coordinator
West Windsor/Plainsboro
High School
2 Hamilton Drive
Cranbury, NJ 08512

• Andrea Rella,
(Student Activist)
38 Tall Oaks Drive
East Brunswick, NJ 08816
(Bishop George Ahr H.S.)

• Lisa Shingelo,
(Student Activist)
231 Franklin Street
Trenton, NJ 08658
(Trenton State College)

• Carrie Riker,
(Student Activist)
641 Kimball Avenue
Westfield, NJ 07070
(Trenton State College)

• Thomas Stock, Teacher
(Selden Middle School)
11 Ingelore Court
Smithtown, NY 11787

• Andrew Jackson,
Student Activist
5450 West Wheeler Road
Fayetteville, AR 72703
(Ramay Jr. H. S. Student)
501-442-5434

• Kris Carson,
Student Activist
2363 Holly
Fayetteville, AR 72703
501-443-2995

• Betsy Penix, Teacher
Walker Elementary School
Springdale, AR

• April Scott or Gary Letson,
Advisors
Monte Vista High School
8075 Presidio Drive
Cupertino, CA 95014

• Andrew Goodband, Advisor
Sacopee Valley High School
RR #1 Box 64
Cornish, ME 04020

• Chris McCullough
The Education Resource
Center of Rhode Island
50 Rounds Avenue
Providence, RI 02907
401-253-1752

• Yvonne Womack, Principal
Edward G. White Elementary
1136 West 122nd Street
Chicago, IL 60643
312-568-7861

• Michael Ashley,
Science Chairman
William T. Sherman School
1000 West 52nd Street
Chicago, IL 60609
312-268-2313

• Jim Rishebarger, Advisor
Palm Beach H.S.
1 Pirate Lane
Melbourne, FL 32901
407-952-5900

• Al Burman
Swift School
5900 N. Winthrop
Chicago, IL 60660

Welcome back to a new school year! For our first issue, we are including the names of those people who have contacted us directly about their desire to 'Network' and share with others. This list includes elementary, junior high and high school students, teachers, and principals - people working on a daily basis in our nation's schools. They are all deeply concerned about our planet, and have the energy to initiate projects, to spread the word, and to be leaders in the everyday challenge to treat our planet properly.

Some suggestions to using our networking list:

- *Call or write to someone on the list. Use Sierra Ecology as a way to introduce yourself.*
- *Find out about each other and discuss what the local issues are and what kinds of activities students are involved with, and what issues they're concerned about.*
- *Try to design a joint project - using local issues or perhaps a national issue - if an actual project together seems impossible, how about simply sharing the results of what you're doing with the other group by setting up a communication system between students.*
- *Communication and sharing between students and teachers throughout the country is an opportunity to encourage each other and remind us that what we do is important, and that all of our efforts are somehow linked toward a common goal.*

Good luck & please keep us posted!

Bob Vlahakis

• Ken Keliher, Teacher
(Appleton East H.S.)
2121 Emmers Drive
Appleton, WI 54915

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SIERRA CLUB'S NEWSLETTER HIGHLIGHTING ENVIRONMENTAL ACTION IN THE CLASSROOM

• Lora Stonebraker, Advisor
South Gate Jr. High School
4100 Firestone Blvd
South Gate CA 90280

• Laura McCluskey, Advisor
Science Department
Parsippany Hills High School
Parsippany, NJ
201-682-2815

• Leslie Fretzin, Advisor
2035 N. Mobile
Chicago, IL 60639

• Sheri Sohm, KOPE Project
(Kids Organized To Protect
Our Environment)
Hawthorn Elementary School
1675 South 600 East
Salt Lake City, UT 84105
801-481-4824

• Miss Hettlinger, Teacher
St. Scholastica High School
7416 N. Ridge Blvd.
Chicago, IL 60645-2408

• Gloria Dobry, Teacher
Gunsaulus Academy
4420 South Sacramento Ave.
Chicago, IL 60632

• Tina Loos, H.S. Student
St. Ignatius College Prep
1076 W Roosevelt Road
Chicago, IL 60608

• Gina Hilton, Teacher
(Elementary School)
97 S. Curondelet Court
Mobile, AL 36608
205-342-4544

• Suzann E. Brown, Teacher
Sand Lake Elementary School
PO Box 400, Rt. 43
Averill Park, NY 12018

• William Young,
Student Activist/Artist/Writer
1420 Snata Oak Drive
Norcross, GA 30093
404-925-9235

• Therese Devine, Teacher
Pacifica Manor School
411 Oceana Blvd.
Pacifica, CA 94044
415-355-3730

• Dawn Coughlan, Student
Activist
Delaware Nature Society
PO Box 700
Hockessin, DE 19707

• Nancy Franz, Teacher
Rt. 1 Box 39F
Washburn, WI 54891

• Alec Young,
Student Activist
1420 Shanta Oak Drive
Norcross, GA 30093

• Larry Clark, Advisor
La Jolla High School
750 Nautilus Street
La Jolla, CA 92037

• Diane Cuniberti, Principal
Oxford Central School
Oxford, NJ
908-453-4101

Trista Claxon,
High School Student Activist
(President's Environmental
Youth Award Winner!)
2137 Georgian Way
Lexington, KY 40504
606-278-4126

• Denise or Glen Whetzel
(High School Teachers)
6000 N. Woodruff Avenue
Lakewood, CA 90713

The following teachers were all part of our Educator's Workshop this summer:

• Patricia Buney
2410 South Elm
Sanford, FL 32771
407-330-2972

• Antonia Daly
142 Sullivan Street
New York, NY 10012

• Margaret Dixon
6268 Kirby Downs
Memphis, TN 38115
901-795-8634

• Ron Drozd
519 East Main
Madison, IN 47250
812-265-4302

• Coleen Hassett
90-23- 221st Street
Queen Village, NY 11428
718-468-3774

• Wende Harper
218 Four Brooks Road
Stamford, CT 06903
203-322-6754

• James Hay
1300 5th Avenue #24
Delano, CA 93215
805-721-0651

• Dr. Clarence Heard
(University of Central Fla.)
1209 Howell Creek Drive
Winter Springs, FL 32708

• Jerry Heard
144 El Nido Road
Portola Valley, CA 94028
415-851-2718

• Virginia Hilsman
14510 Blind Shady Road
PO Box 753
Nevada City, CA 95959

• Kathleen Hooper
4224 East Broadway
Long Beach, CA 90803

• Joanna Hughiiff
21003 Reserve Court
Fairview Park, OH 44126

• Ken Koppenhoefer
1770 King Henry Drive
Kissimee, FL 34744
407-846-7574

• David Livingstone
PO Box 1695
Paso Robles, CA 93447
805-995-0862

• Juliette Lowins
1110 Wesley Avenue
Evanston, IL 60202
708-864-0041

• El-Hawri Moam
111 Northwest Teakwood
Lees Summit, MO 64064
816-478-6144

• Corina Yuen
1235 Rosehill Drive N.W.
Calgary, AB
Canada
403-282-6291

Please submit any student's names, phone numbers, poetry, writings or photographs to:

Bob Vlahakis
c/o Sierra Club Newsletter
SWR Middle School
Randall Road
Shoreham, N.Y. 11786
(516)- 929-8500

Don't be shy. Share your special projects!

• James Orben
PO Box 13
Funks Mill Road
Springtown, PA 18081

• Steve Robins
The Buckley School
3900 Stansbury Ave.
PO Box 5947
Sherman Oaks, CA 91413

• Joseph Rolands
22448 Lakeland
St. Clair Shores, MI 48081
313-445-8276

• John Roos
4861 Squaw Valley Court
Placerville, CA 95667
916-626-3816

• Randy Siercks
The Buckley School
3900 Stansbury Ave.
PO Box 5947
Sherman Oaks, CA 91413

• Rick Stone Wellbeloved
RT. 1 Box 175 WA
Faber, VA 22938
804-361-9347

• Craig Stowell
1920 Oakland Ave. Apt. 203
West St. Paul, MN 55118
612-455-4752

• Marianne Wedmore
5 Cornelia Ave.
Mill Valley, CA 94941
415-383-1542

• Patricia Wherry
16827 Park Place #32
Eagle River, AK 99577

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SECTION H

Colleges and Universities with Outstanding Environmental Education Programs

COLLEGES AND UNIVERSITIES WITH OUTSTANDING ENVIRONMENTAL EDUCATION PROGRAMS

The schools listed below have strong undergraduate (ug) and/or graduate (grad) programs in environmental education. Contact persons are provided to facilitate correspondence.

Dr. William Stapp
School of Natural Resources
Samuel Trask Dana Building
University of Michigan
Ann Arbor, MI 48103 (ug and grad)

Dr. Ty Minton
Antioch New England Graduate School
R.F.D. #1 Box 219
Westmoreland, NH 03467
603/357-3122 (grad)

Dr. Ted Mills
Oklahoma State University
306 Gunderson Hall
Stillwater, OK 74078
405/744-7125 (grad)

Dr. Darleen Stoner
California State University
5500 Univesity Parkway
San Bernadino, CA 92407
714/880-5640 (grad)

Dr. Harold Hungerford
Dept. Curriculum & Instruction
Southern Illinois University
Carbondale, IL 62901
618/453-4211 (grad)

Dr. Richard Wilke
College of Natural Resources
University of Wisconsin
Stevens Point, WI 54481
715/346-2853 (ug and grad)

Dr. Robert Roth
School of Natural Resources
The Ohio State University
Columbus, OH 43212-1792
615/888-6742 (ug and grad)

Dr. Lou Iozzi
Cook College
Rutgers University
New Brunswick, NJ 08903-0231
908/932-9271 (ug and grad)

Dr. John Kirk
New Jersey School of Natural
Resources
RD #2 Box 272
Branchville, NJ 07826
201/948-4646 (grad)

Above information courtesy of Dr. Richard Wilke, Associate Dean, College of Natural Resources, University of Wisconsin/Stevens Point; and the North American Association of Environmental Education.

SECTION I

Careers in the Environment

SOME CATEGORIES OF PROFESSIONS WHICH CAN SERVE TO PROTECT THE ENVIRONMENT

Agriculture
Archaeology
Architecture
Biology
Botany
Chemistry
Computer Science
Ecology
Economics
Education
Engineering
Fisheries
Geography
Geology
Horticulture
Industrial Hygiene
Journalism
Landscape Architecture
Management
Parks and Recreation
Public Administration
Public Health
Toxicology
Urban Planning
Wildlife Sciences
Writing
Zoology

SOURCES OF INFORMATION FOR JOB AND INTERNSHIP OPPORTUNITIES

I. Environmental and Natural Resources

Job Bulletin
School of Natural Resources
Office of Academic Programs
1024 Dana Building
Ann Arbor, MI 48109-1115

Includes mid management, entry level, internship, co-op, and volunteer positions in natural resource and environmental related fields. Full-time, part-time, temporary and permanent positions are all included. Available to SNR students and alumni in OAP or send self-addressed stamped ($.52) large size envelope.

Legacy
National Association for Interpretation (N.A.I.)
6700 Needwood Road $45/year
Derwood, MD 20855   6 issues per year

Publishes a newsletter about environmental education and naturalist topics and has an Employment Listings Number 301-948-8844 and an Internship Listings Number 301-948-8868; printouts of info for the week cost $3.00.

Environmental Jobs Opportunities
Institute for Environmental Studies $7.50/year
University of Wisconsin - Madison   10 issues per year
550 North Park Street
15 Science Hall
Madison, WI 53706

Describes administrative, faculty/teaching, research/science/consulting, internships/volunteers, and fellowships.

Environmental Opportunities
Antioch/New England Graduate School $39.00/year
Environmental Opportunities   monthly
P. O. Box 670
Walpole, NH 03608

Provides job listings for NR administration, research and education including seasonal and internship positions.

Job Scan
Student Conservation Association $35.00/year or $20/6 months
P. O. Box 550   monthly
Charlestown, NH 03603

Job listing for people seeking employment in the environmental quality and resource management fields. Includes corporate, government, and non-profit employment as well as internships and volunteer positions. Also included are advice from professionals, news of the job market, and environmental calendar of events.

Earth Work is a new monthly magazine for people seeking environmentally oriented careers. A recent issue contained 16 pages of environmental positions worldwide ranging from internships and administrative assistants for environmental groups to camp directors, state natural resource managers, and biologists. There are also features and profiles of people working in different environmental careers. The magazine's publisher, The Student Conservation Association, is a non-profit educational organization that provides opportunities for student and adult volunteers "to assist in the stewardship and conservation of natural resources." A one-year subscription costs $29.95; six months, $15.95, or a single issue, $6. For more information contact the editorial offices of the Student Conservation Association, 1800 N. Kent St. Suite 913, Arlington, VA 22209; phone (703) 524-2441. For subscriptions, write to SCA-Earth Work, P. O. Box 550, Charlestown, NH 03603-9982.

The Nature Conservancy

The Nature Conservancy national office by special arrangement sends all of the national and international openings available with TNC to the Career Resource Center weekly. This information is not available by subscription.

The Job Seeker (formerly the Nature People's *Job Bulletin*)
Rt. 2, Box 16 $78/24 issues
Warrens, WI 54666 two per month

Lists current job vacancies and registers in forestry, parks, recreation, wildlife, biology and related positions in federal and state agencies and the private sector. It tells you the specific job titles, wages, locations, application forms required, filing dates and the addresses and telephone numbers needed to apply. Also publishes an Employment Guide ($6.00) with info on how to apply to federal jobs, and a Summer Jobs Announcement ($12.00).

Opportunities
Natural Science for Youth Foundation $25.00/year non members
Publications Office every two months
P. O. Box 9330
Milford, PA 18337

Listings for nature centers, environmental education centers, and museums, including internships. Professional membership ($35.00) also available which includes notifications about seminars, workshops, etc.

II. Environmental & Outdoor Education

Information on outdoor/environmental education and job announcements may be found through these sources.

The Nature People
publishes job announcements
(608) 378-4344

Western Interpretive Association
P. O. Box 28366
Sacramento, CA 95828
Doug Bryce, Executive Manager

American Camping Association
Bradford Woods
5000 State Road 67 North
Martinsville, IN 46151-7902
jobs published monthly in member's publication Camping Magazine

Outdoor Education for Handicapped
403 Beadly Hall
University of Kentucky
Lexington, KY 40506

Programs for Persons Who Are Disabled
Outdoor Education Program
Bradford Woods
5040 State Road 67 North
Martinsville, IN 46151

Association for Experiential Learning (Adventure Education)
P. O. Box 4625
Denver, CO 80204

III. Short-Term Positions

The CEIP Fund Inc.
Matches qualified junior and senior undergraduates, graduates, doctoral students, entry-level environmental job seekers, and recent graduates, for short-term environmental positions (3 to 6 mos. and longer).
Organizations offering positions through the CEIP Fund: government agencies, corporations, consulting firms, and non-profit groups.
Average stipend: $350/wk
Interested individuals should write to:

CEIP Fund Inc.
68 Harrison Avenue
Boston, MA 02111-1907

Note: The Complete Guide to Environmental Careers
Available from the CEIP Fund
Dept. BKS
68 Harrison Avenue, 5th Fl
Boston, MA 02111-1907

Price:
cloth $24.95
paper $14.95
plus $2.50
shp. & hndlg.

A SAMPLE OF ENVIRONMENTAL JOB OPPORTUNITIES IN SPRING 1991

Forestry

Forestry Technician (firefighter) - Buenos Aires National Wildlife Refuge, Sasabe
Lead Forestry Technician - Grand Canyon National Park
Forestry Technician (dispatcher) - Grand Canyon National Park
Forestry Worker - Metro. Parks, Columbus, Ohio
Forestry Manager - NYC Parks and Recreation
Assistant Project Manager - City Parks Foundation, NYC

Biology

Wildlife Biologist - Wetlands Research Assoc., Inc., San Rafael, CA
SYCAN Marsh Range Ecologist - Portland, OR
Principal Investigator Botanical Invent. - Nature Conservancy, Ft. Bragg, NC
Grandfather Myn. Seasonal Ecologists - NC
Zookeeper - Oakland Zoo, CA
Biology Technician - Grand Canyon National Park
Aquaculture Research Assistant - Mississippi State University
Aquaculturist - SeaCritters Inc., Key Largo, FL
Fish and Wildlife Biologist - Albuquerque, NM
Aquatic Toxicologist - Wildlife International Ltd., Easton, MD
Biological Aide - USF&WS, Oceanville, NJ
Grizzly Bear Project Technician - NY Game and Fish Department
Wildlife Res. Assistant - Mussel Fork and Davisville Wildlife Management Area, MO
Microbiologist - USDA Agric. Res. Service, Greenbelt, MD
Botanist/Ecologist - Unity College, ME
Wildlife Biologist - Unity College, ME
Asst. Prof. Avian Ecologist - Department of Natural Resources, Washington State University, Pullman, WA

Fisheries

Fish Habitat Technician - Department of Fish & Wildlife, OR
Fish & Wildlife Mgr. (Asst. Hatch. Manager) - Department of Fish & Wildlife, OR
Biological Technician (Fisheries) - National Marine Fisheries Service, Woods Hole, MA
Observers (Marine) - Frank Orth & Assoc., Bellvue, WA
Fisheries Technician - RMC Environmental Services, Inc., Lancaster, PA

Environmental Sciences

Environmental Prof. (NEPA Specialists, Waste Management Specialists, Environmental Health Physicists, Socioeconomic/cultural Resource Specialists) - NUS Corp., Aiken, SC
Environmental Health Specialist - Tulare City Health Services Department, Vesalia, CA
Hydroecologists - Gale Assoc. Inc., Weymouth, MA
Geogr. Information Specialist - Navajo Nat. Heritage Program, Window Rock, AZ
Environmental Specialist - Department of Environmental Reg., Tallahassee, FL
Toxicologist/Environmental Scientist - Seattle, WA
Environmental Monitoring Technician - Criterion Labs, Inc., Philadelphia, PA
Senior Toxicologist - Envirologic Data, Portland, ME

Conservation

Mineland Reclamation Specialist - Department of Environmental Conservation, NY
Douglas Myn. Caretaker - Sibago, ME
Director of Preserves - Nature Conservancy, Cold Spring Harbor, NY
Shorebird Warden - Nature Conservancy, Little Compton, RI
Refuge Manager - National Park Service, MT
Roadside Habitat Management Assistant - Interset, IA

Administration

Extension Agent Natural Resources - University of Minnesota, Rochester, MN

Environmental Education

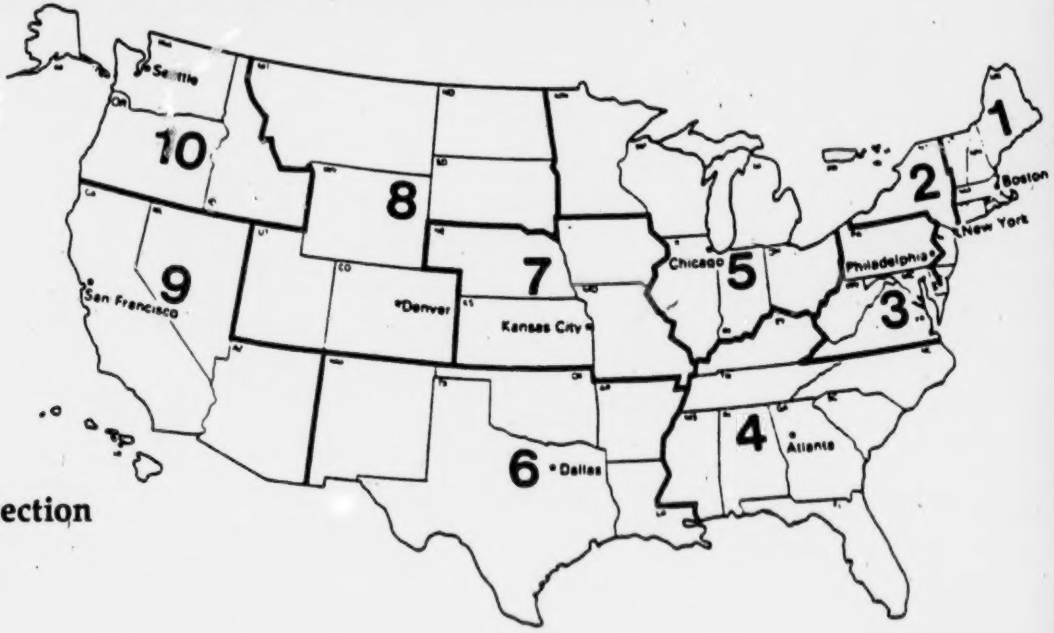
Naturalist/Caretaker - Garrison, NY
Interpretive Naturalist - Metro Parks, Columbus, OH
Seashore Naturalist - Ocean Institute/Brookdale College, Sandy Hook, NJ
Instructor (Outdoor Education) - American Outdoor Schools, La Mirada, CA
Environmental Education Instructor - Keewayden Environmental Education Center, Salisbury, VT
Outdoor Education Instructor - Sea Gull/Seafarer Outdoor Center, Arapahoe, NC
Environmental Education Teacher - Natures Classroom, Southbridge, MA

Taken from *The Job Seeker*, Route 2 Box 16, Warrens, WI 54666

SECTION J

Helpful Hints and Information

Regional Offices of EPA and States Covered



Environmental Protection Agency (EPA)

Headquarters
401 M St., S.W.
Washington, DC 20460
(202) 260-4700
(Administers programs to control air and water pollution, solid waste, toxic substances and noise)

Region I
(CT, ME, MA, NH, RI, VT)
John F. Kennedy Federal Building
Mail Code RAA
Boston, MA 02203
(617) 565-3400

Region II
(NJ, NY, PR, VI)
26 Federal Plaza
New York, NY 10278
(212) 264-2525

Region III
(DE, MD, PA, VA, WV, DC)
841 Chestnut St.
Philadephia, PA 19107
(215) 597-9814
Region IV
(GA, FL, AL, KY, MS, SC, NC, TN)
345 Courtland St., N.E.
Atlanta, GA 30365
(404) 347-3004

Region V
(IL, IN, MI, MN, OH, WI)
77 W. Jackson
Chicago, IL 60604
(312) 353-2000

Region VI
(AR, LA, NM, OK, TX)
1445 Ross Ave., Suite 1200
Dallas, TX 75202
(214) 655-6444

Region VII
(IA, KS, MO, NE)
726 Minnesota Ave.
Kansas City, KS 66101
(913) 551-7006

Region VIII
(CO, MT, ND, SD, UT, WY)
999 - 18th St., Suite 500
Denver, CO 80202-2468
(303) 293-1603

Region IX
(AZ, CA, HI, NV, American Samoa,
Pacific Trust Terr., Wake Is.)
75 Hawthorne St.
San Francisco, CA 94105
(415) 744-1500

Region X
(AK, ID, OR, WA)
1200 - 6th Ave.
Seattle, WA 98101
(206) 553-5810

BEST COPY AVAILABLE

David Galvin & Sally Toteff

TOXICS on the HOME FRONT

DESPERATELY SEEKING SAFETY: IDENTIFYING HAZARDOUS HOUSEHOLD PRODUCTS

DETERMINING WHETHER a household product is hazardous is often a difficult if not impossible task. Manufacturers are not required to list the ingredients of most products (with the exception of some foods and cosmetics), and even if they were, the health effects of many ingredients are not known because they haven't been adequately tested. Labels are usually the only available source of content information, but they are often incomplete.

In accordance with federal regulations, a product's degree of acute toxicity must be marked with the following signal words, in increasing order of damage potential: *caution*, *warning*, or *danger*. Other key words that usually indicate hazardous substances are *poison*, *flammable*, *volatile*, *caustic*, and *corrosive*. But rules defining how manufacturers should label a product are vague, and it's estimated that 85 percent of all labels are misleading. In general, it's best to avoid products that are labeled with any of these cautionary words when alternatives exist; be wary of unlabeled products, because they aren't necessarily safe; and, regardless of what is or is not on a label, follow these safety guidelines:

- Heed label warnings (as limited as they may be), but be aware that first-aid information on labels can be misleading or incorrect. Call the poison center for up-to-date advice.
- Keep products in their original containers and store them in a safe place, out of reach of children.
- Do not overuse a product. Twice as much does not necessarily work twice as well. Follow dilution instructions carefully.
- Never mix products or different brands of the same product. Poisonous or explosive chemical reactions may occur.
- Do not use hazardous products that are old. Many contain dangerous chemicals that have been banned from the marketplace.
- Wear protective equipment such as glasses, goggles, gloves, or respirators with interchangeable cartridges when using a product that is harmful to eyes, skin, or lungs. Consult the *Yellow Pages* under "Safety Equipment" for stores that carry safety products.
- Avoid wearing soft contact lenses while using products that emit harmful vapors.
- Avoid breathing mists or vapors, especially from aerosol products. Use proper ventilation if you must use hazardous products indoors.
- If pregnant, try to avoid exposure to all toxic chemicals. Many household products have not been tested for their effect on unborn children. Even "safe" chemicals can be unsafe when exposed to other chemicals.
- Post the number of the nearest poison center and other emergency numbers by the telephone.
- Keep readily available a one-ounce bottle of syrup of ipecac, used to induce vomiting. Never use it without the recommendation of a physician or poison center personnel.

—D. G. and S. T.

Sierra Club
730 Polk Street
San Francisco, CA 94109

Reprinted from Sierra, *September/October 1986.*

HOUSEHOLD HAZARDOUS WASTE REFERENCE CHART

	SUBSTANCE	PROBLEM	PROPER DISPOSAL	ALTERNATIVES
PESTICIDES & HERBICIDES	Rodent bait	Lethal to humans and pets in minute quantities, such as one taste.	Use up according to directions or take to hazardous-waste collection site.	Cats; traps; chopped bay leaves and cucumber skins
	Insect repellent	Poisonous. One teaspoonful may be lethal to an adult.	Use up according to directions or take to hazardous-waste collection site.	Screens; protective clothing; creams or lotions are occasionally effective
	Garden herbicides, insecticides, fungicides, etc.	Poisonous. Can persist in the environment. Especially hazardous around food plants.	Use up according to directions or take to hazardous-waste collection site.	Strong hosing or hand picking; keep garden clean; use "natural" insecticides such as pyrethrins, or predators such as ladybugs
HOME & PERSONAL PRODUCTS	Drain cleaners	Poisonous. Can cause serious burns. May contain carcinogens.	Wash down drain with lots of water or take to hazardous-waste collection site.	Boiling water; plunger; metal snake
	Oven cleaners	Poisonous. Can cause serious burns. May contain carcinogens. Spray cans the most dangerous.	Use up according to directions or take to hazardous-waste collection site.	Salt; quarter cup of ammonia overnight
	Toilet cleaners	Poisonous. Can cause serious burns. One teaspoonful may be lethal to an adult.	Wash down drain with lots of water.	Mild detergent *or* small amounts of bleach
	Spot removers	Poisonous. Most are solvent-based. May be carcinogenic.	Use up according to directions or take to hazardous-waste collection site.	Immediate cold water and detergent; rubbing alcohol; or a little acetone
	Silver polishes	Poisonous. May contain carcinogens. One ounce may be lethal to an adult.	Use up according to directions or take to hazardous-waste collection site.	Soak silver in water with baking soda, salt, and small piece of aluminum foil
	Furniture polishes	Include various poisonous solvents. One ounce may be lethal to an adult.	Use up according to directions or take to hazardous-waste collection site.	Mineral oil with lemon oil (but this may strip finish) or Carnauba wax
	Cleansers and powder cleaners	Strong oxidizers. Poisonous. Can cause burns.	Wrap tightly in plastic, place in a box, tape shut, and put in garbage.	Baking soda and mild detergent; elbow grease
	Window cleaners	Contain harmful chemical compounds and sometimes carcinogens. May cause birth defects.	Wrap tightly in plastic, place in a box, tape shut, and put in garbage.	Vinegar and water
	Mothballs	Contain poisonous chemical compounds.	Use up according to directions or take to hazardous-waste collection site.	Cedar chips; newspapers; wrap wool clothing in plastic bags during warm seasons
	Bleach & liquid cleaners	Contain strong oxidizers. Can cause burns.	Wash down drain with lots of water.	Use powder, not liquid bleach
	Dyes	Poisonous, especially to kids; don't use cooking utensils when dyeing. May be carcinogenic.	Wrap tightly in plastic, place in a box, tape shut, and put in garbage.	Use vegetable dyes such as onion skins, teas, marigolds
AUTOMOTIVE & PAINT PRODUCTS	Motor oil, brake & transmission fluid	Contain poisonous chemical compounds. Oil also has lead, other metals. Fluid may be lethal.	Take to service station or local waste-oil recycling center.	None
	Antifreeze	Sweet-tasting, poisonous, may be lethal; don't leave puddles where kids, pets can get to them.	Wash down drain with lots of water.	None
	Car batteries	Contain lead and are highly acidic (can produce serious burns).	Trade in or take to special recycling center (see phone book).	None
	Paints*	Contain solvents and other poisonous chemical compounds.	Tightly wrap residue and place in garbage or donate to someone who needs paint.	None; use water-based (latex) paint if possible; avoid aerosol sprays
	Lacquer, varnish, thinner, & stripper	Poisonous. Solvent-based. Some are flammable and carcinogenic.	Use up according to directions or take to hazardous-waste collection site.	None; except for stripper, sand off old finish in well-ventilated area

*Old lead-based paints are toxic and should not be used. Take them to a hazardous-waste collection site (or store them until one is available)

Sources: Citizens for a Better Environment; Selina Bendix, Bendix Environmental Research, Inc

DOCTOR

HOSPITAL

POLICE

POISON CENTER

RECYCLING CENTER

IMPORTANT TELEPHONE NUMBERS

Highlights of the Clean Air Act of 1990

Old Law	New Law	Deadlines
MOTOR VEHICLES/FUELS		
Maximum tailpipe emission standards are 1.0 gram per mile for nitrogen oxides and 0.41 grams per mile for hydrocarbons	■ Adds emissions certification test procedures and reviews current testing methods	■ by model year 1993
	■ Requires the EPA to regulate evaporative engine emissions	■ by 1994
	■ Reduces new car tailpipe emissions of hydrocarbons and nitrogen oxides by 35% and 60%, respectively	■ in some new cars by 1994, all new cars by 1996
	■ Requires onboard monitoring systems on new light-duty vehicles and trucks to determine if the pollution control devices are working properly	■ 1994
	■ Sets tougher carbon monoxide (CO) cold temperature start standards for new light-duty trucks	■ phased in 1994-96, second round of CO reductions in model year 2002 if six or more cities are still violating EPA standards
	■ Requires onboard canisters to trap refueling emissions on new cars	■ phased in 1995-98
	■ Requires oil companies to sell only clean "reformulated" gasoline — containing less toxics and smog-forming compounds — in the nine most polluted cities. Other polluted cities can also adopt this requirement	■ 1995
	■ Requires 8-yr/80,000 mile warranties for expensive pollution control equipment, such as catalytic converters	■ model year 1995
	■ Requires emission control systems meet standards for 10 years or 100,000 miles for new cars	■ phased in 1996-98
	■ Requires significant hydrocarbon emissions cuts for fleet cars and trucks	■ cars and light-duty vehicles phased in 1998-2001, heavy-duty trucks 1998
	■ Requires that 1 million clean vehicles be sold in Southern California	■ by 1999
	■ Allows the EPA to determine if a second round of tailpipe emissions reductions is necessary	■ model year 2003 if required
URBAN SMOG		
Requires areas to meet health standards for six pollutants, including ground-level ozone and carbon monoxide	■ Regulates smog-forming pollutants from offshore oil rigs within 25 miles of shore by same standards as onshore rigs, except in AL, LA, MS, TX	■ by 1992
	■ Establishes five categories of polluted areas — marginal, moderate, serious, severe, and extreme — that will be required to implement appropriate pollution control programs to meet EPA ozone health standards by set deadlines. If states do not submit suitable plans for meeting standards, the EPA must do the job for them.	■ by 1994 for marginal by 1997 for moderate by 2000 for serious by 2016 for severe by 2021 for extreme
	■ Regulates sources emitting 100 tons of ozone-forming pollutants per year in marginal and moderate areas; 50 tons per year in serious areas, 25 tons in severe areas, and 10 tons in extreme areas	■ according to state plans, by category: 1994, 1997, 2000, 2016, and 2021, respectively
	■ Requires medium- to large-sized gasoline dealers in moderate–extreme areas to install and operate vapor-recovery nozzles on gasoline pumps	■ 1993-95
	■ Separately regulates areas that exceed the small particulate matter health standard	■ 1994-2001
	■ Requires 15% reductions in smog-forming emissions in all except marginal areas	■ by 1996, thereafter, most areas will have to achieve 3% reductions per year
WORKER RETRAINING		
No such provision in the current law	■ Establishes a $250 million compensation fund for the next five years. Workers who lose their jobs as a result of the new law will be eligible for job retraining and other benefits	■ immediately; $50 million to be authorized for FY 1991, further funds authorized as necessary, not to exceed $250 million

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Washington Office: 408 C Street NE Washington, D.C. 20002 (202) 547-1141

DECEMBER 1990

Highlights of the Clean Air Act of 1990

Old Law	New Law	Deadlines
OZONE LAYER		
No specific provisions in the current law	Halts the production of chemicals destroying the upper atmosphere's ozone layer	
	■ Phases out chlorofluorocarbons (CFCs) and carbon tetrachloride	■ through the 1990s, outlawed by 2000
	■ Requires the recycling of ozone-depleting chemicals removed from air conditioners, refrigerators, and other equipment	■ beginning in 1992
	■ Requires the EPA to develop a list of safe alternatives to CFCs	■ by 1993
	■ Bans hydrochlorofluorocarbons (HCFCs)	■ by 1994 for aerosol cans and certain plastic foam products; 2015 for some other uses, 2030 for all uses
	■ Bans methyl chloroform	■ 2002
ACID RAIN		
No specific provisions in the current law.	Cuts in half the amount of sulfur dioxide (SO_2) and nitrogen oxides (NO_x) that can be emitted from smokestacks.	
	■ Requires the 111 largest sulfur-emitting electric utility plants in 22 states to meet stricter SO_2 standards. Reduces SO_2 emissions by 10 million tons annually.	■ half by 1995, all by 2000
	■ Cuts NO_x emissions by 2 to 4 million tons annually by requiring utilities to meet specific limits.	■ 1995–2000
	■ Sets a cap on SO_2 emissions. After the deadline, if a utility wants to increase its emissions, it must pay another utility to make an equivalent reduction.	■ 2000
TOXIC AIR POLLUTANTS		
The EPA regulates industrial emissions of seven toxic chemicals. The EPA is required to protect public health from toxic chemicals in the air with "an ample margin of safety."	Reduces the emissions from industrial facilities, of toxic air pollutants that can cause cancer, birth defects, and other serious ailments, by 70% to 90% by the year 2003.	
	ROUTINE OPERATIONS:	
	■ Allows citizens to more easily sue industries for civil penalties, or the EPA for delaying required cleanup actions longer than six months.	■ immediately
	■ Requires studies and controls on air toxics that affect the marine food chain.	■ by 1992 for study and report; controls by 1993 if necessary
	■ Reduces emissions of 189 toxic chemicals from major industrial sources to the average level of the cleanest plants within each industry.	■ 1992–2005
	■ Requires all major industrial sources to have certain permits in order to pollute.	■ by mid-1993
	■ Requires the EPA to regulate 90% of the 30 most serious toxic pollutants emitted by "area" sources — dry cleaners, gas stations, etc.	■ by 2000
	■ Requires each source to reduce its emissions to provide an "ample margin of safety" for nearby residents. "Ample margin" is defined as a 1-in-10,000 risk of cancer to the most exposed person.	■ phased in beginning in 2003, coke ovens will get an extension until 2020 if they make certain interim reductions
	CHEMICAL ACCIDENTS:	
	■ Establishes an independent Chemical Safety Board to investigate chemical accidents to determine their causes.	■ immediately
	■ Requires industrial plants to prepare formal safety reviews which will be available to the public. Authorizes the EPA to set new safety standards at plants where toxic chemicals are used in bulk.	■ 1993

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DECEMBER 1990

AIR POLLUTANTS

POLLUTANT	SOURCE	EFFECT ON HUMAN HEALTH	EFFECT ON ENVIRONMENT
Carbon monoxide (CO)—a gas	Incomplete combustion of fossil fuels: —⅔ comes from motor vehicles —⅓ comes from industrial processes, home furnaces, incinerators, and forest fires	Reduces the blood's ability to absorb oxygen, which —causes fatigue and headaches, —impairs vision and judgment, —slows reflexes, and —causes unconsciousness and death at high concentrations Exposure over a long time can make heart and lung diseases worse When inhaled by a pregnant woman, CO may damage the physical and mental development of her unborn baby	
Sulfur dioxide (SO_2) —a gas	—⅔ comes from electric power plants that burn coal and oil —⅓ comes from oil refineries, smelters, industrial boilers, residential heating units, and volcanoes	—blocks breathing passages —irritates lungs of people with asthma —irritates eyes and skin —can make existing lung disease worse —can increase the number of people who have lung disease	—stunts plant growth and damages food crops and trees —eats away at monuments, statues, and buildings; discolors marble, mortar, limestone, and slate —damages and fades rubber, leather, paper, paint, and some fabrics —corrodes metals, such as steel, iron, and zinc —reduces visibility —combines with other chemicals in the atmosphere to form sulfuric acid, which falls to the ground as acid rain, harming plants and killing some aquatic life
Nitrogen oxides (NO & NO_2) —gases	High temperature combustion: —½ comes from transportation —½ comes from industrial and fossil fuel power plants Lightning	—irritates lungs, especially in asthmatics —irritates eyes, nose, throat, and skin —fatal in high concentrations	—in high concentration, poisons vegetation —reduces plant growth and seed production —damages eggs of fish and amphibians during spring snow melt —reduces visibility —reacts with other chemicals in the atmosphere to form ozone and acid rain
Lead (Pb) —a metal	—motor vehicle exhaust —metal smelting and processing factories	—affects blood-forming, reproductive, nervous, and kidney systems —builds up in bone and other tissues and affects health after exposure is ended —can cause hyperactivity, decreased learning ability, and other problems in children	—affects other animals much as it does humans —can become a part of the soil and affect plants and animals living in the soil
Particulates —solid particles or liquid droplets	—coal-burning —land-clearing activities, such as farming and building —dust stirred by automobiles —motor vehicle exhaust —mining —industrial plants —windstorms, forest fires, and volcanoes	—causes coughing and throat irritation —can carry cancer-causing organic compounds and heavy metals into the lungs —can make heart and respiratory disease worse —can increase symptoms of respiratory problems in children	—reduces visibility —soils buildings and painted surfaces —corrodes metals —interferes with photosynthesis —may alter climate
Ozone (O_3) —a gas	—formed when nitrogen oxides and hydrocarbons (chemicals released mostly by motor vehicles) combine in sunlight	—irritates mucous membrane, which helps filter air entering lungs —causes choking and coughing —reduces resistance to colds and other respiratory diseases —irritates eyes —can make asthma, bronchitis, and emphysema worse	—injures and kills crops and trees —damages fruits and seeds —affects entire ecosystems, including altering wildlife habitat and reducing food sources —deteriorates rubber and paint

The Sierra Club Activist Network

The Power to Make a Change

Most people recognize the importance of responsible treatment of our environment. This recognition — and the activism that grows from it — has brought about many advances in environmental protection over the past hundred years.

But threats to the environment are many and varied, and solutions are often slow in coming. Government leaders need to be encouraged to pursue sound environmental policies. They need to hear committed expressions of concern about natural resources, pollution control, energy policies, and other vital issues.

When it comes to influencing public officials, no one has more clout than you — the constituent. Government officials usually pay more attention to an assembly of constituents because they know the influence and effectiveness of a well-organized group.

Elected officials also know the difference your combined knowledge and numbers make at election time. By pooling your efforts and enthusiasm with fellow activists, your strength is greatly multiplied.

A Network that Works

The Sierra Club has organized an extensive network of active members to work on particular environmental issues. The activist lists are organized by issue and help the Club concentrate its resources where they will be the most effective.

These lists can be sorted by legislative districts in order to contact the appropriate activists for any given political situation. The network's information is also made available to Club chapters and groups throughout North America to help them rally support on issues of regional importance.

Sierra Club staff in San Francisco, working closely with the Club's lobbyists, regional representatives, and volunteer leaders, constantly monitor worldwide environmental developments. They then pass important information along to our activists by mailed action alerts, electronically transmitted letters, or telephone calls, depending on the urgency.

Your Contribution Counts

Once you join the Sierra Club Activist Network and select an issue that is among the Club's top national priorities, there may be many opportunities for involvement. As part of the activist network, you'll know just what's going on and what you can do to help.

Most often, this means contacting government officials by letter or phone. If you have time or organization skills to contribute, you might be asked to recruit and mobilize other volunteers, or to work with other organizations and the media.

You can choose the level of involvement you want — the only requirement is a desire to make a difference. A century of Sierra Club victories for the environment are testimony to the power of our combined efforts. To join us, just fill out and mail the form on the reverse.

The National News Report—A Tool for Activists

To learn more about current environmental issues worldwide, subscribe to the Sierra Club's *National News Report*. For only $18 a year you can [illegible] this twice-monthly newsletter with the latest news on the Sierra Club's conservation campaigns, national environmental legislation, and the ongoing battle to preserve the world's natural places.

To subscribe to the *NNR*, just include [illegible] or money order for $18, payable to Sierra Club *National News Report*, when you return this form. To speed your subscription, please check the *NNR* box on the reverse side of this form. Be sure to write your membership number in the space provided.

5/91

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Sierra Club Activist Network Enrollment Form.

To participate in the Sierra Club Activist Network, complete the form below and return it to: Campaign Desk, Sierra Club, 730 Polk Street, San Francisco, CA 94109. Please read the reverse before filling out the form. For more information call (415) 776-2211; ask for the Campaign Desk.

Place label here or print
8-digit membership # ____________________
from mailing or *Sierra* label
Name ____________________________________
Address __________________________________
______________________________ Zip ________

You must be a Club member to sign up.

Home Phone (   ) ______________
Work Phone (   ) ______________

☐ I want to be active on the issue(s) I've checked in the grid below.
☐ I'd rather be placed on the "General Interest" list and receive occasional alerts on pressing issues.
☐ Please send me one year of the Sierra Club *National News Report*. My check for $18 is enclosed.

There are two levels of involvement for issue activists:

Level 1 - **ACTIVIST**: indicates willingness to write letters, send mailgrams, phone government officials, or undertake other individual activities.

Level 2 - **ORGANIZER**: in addition to the above, organizers may be contacted to mobilize others to communicate with officials, meet with legislators, present testimony, or contact the media.

Please select only one major category — or two if you really have time. Check box "1" or "2" in the grid to indicate your desired level of involvement. If you select the categories of Energy, Pollution, or Public Lands, you may also check up to two of the subcategories in which you have special interest.

	Code	Level of Involvement 1	2
AGRICULTURAL RESOURCES (including soil conservation)	AG		
ELECTORAL POLITICS	EP	Level 1 only	
ENERGY (General)	EN		
Global Warming/Conservation/Solar	ENCO		
Nuclear	ENNU		
INTERNATIONAL	IN		
MARINE & COASTAL	MA		
Offshore Oil	MAOL		
MILITARY IMPACTS ON THE ENVIRONMENT	MI		
NATIVE AMERICAN SITES	NA		
PESTICIDES	PE		
POLLUTION (General)	PU		
Air Quality	PUAR		
Toxics	PUTX		
Water Quality	PUWA		

	Code	Level of Involvement 1	2
POPULATION/GROWTH POLICY (including urban sprawl and farmland protection)	PG		
PUBLIC LANDS (General)	PL		
Alaska Issues	PLAK		
BLM Wilderness	PLBL		
Forest Wilderness	PLFW		
Mining Law	PLML		
Nat'l Forest Planning	PLFP		
Off-Road Vehicles	PLOV		
Parks	PLPK		
RESOURCE CONSERVATION/ SOLID WASTE (recycling)	RC		
TRANSPORTATION	TR		
URBAN/LAND-USE PLANNING	UR		
WATER RESOURCES (wild & scenic rivers, dams and other water projects)	WR		
WETLANDS	WT		
WILDLIFE	WL		

Often personal relationships are crucial in politics. If you are personally acquainted with a member of Congress or a governor, please indicate this below.

I know Sen./Rep./Gov. ______________________ personally. My connection is:

____

SECTION K

References, Bibiliographies, and Resources

SELECTED CURRICULUM GUIDES

ALBUQUERQUE'S ENVIRONMENTAL STORY
THE DADE COUNTY ENVIRONMENTAL STORY (both 1985)

Teachers' environmental resource books. Holistic in nature, designed for infusion into total curriculum. Informational material specific for Albuquerque and for Dade County (FL), respectively. Activities adaptable to any community.

Hy and Joan Rosner, 4300 Sunningdale, NE, Albuquerque, NM 87110.

A PLACE TO LIVE (1970, update 1990)

A worktext for urban elementary school children containing ten "Walks," "Try This" activities and text.

National Audubon Society, Route 4, Box 171, Sharon, CT 06069
($9.95 individuals, $4.95 school rate).

ACID RAIN (1990)

Eight 50 minute detailed lesson plans for teaching students grades 6-10 about acid rain.

By Colin Hocking, Jacqueline Barber and Jan Coonrad.
Great Explorations in Math and Science, Lawrence Hall of Science,
University of California, Berkeley, CA 94720

ACID RAIN: A STUDENT'S FIRST SOURCEBOOK (1990)

Information and experiments.

U. S. Environmental Protection Agency Distribution Unit,
Cincinnati, OH 45268 EPA/600/9-90/627.

GLOBAL WARMING ACTIVITIES (1991)

Two booklets for high school students (one for science, one for social studies) containing activities teaching about global warming.

Climate Protection Institute, 5833 Balmoral Drive, Oakland, CA 94619. $18 for both books plus a free copy of DOE's *GREENHOUSE EFFECT*.

GLOBAL WARMING, THE GREENHOUSE EFFECT (1990)

Lessons for teaching about global warming and the greenhouse effect.

By Colin Hocking, Cary Sneider, John Erickson, Richard Golden.
Great Explorations in Science, Lawrence Hall of Science,
University of California, Berkeley, CA 94720.

GOOD EARTH ART: ENVIRONMENTAL ART FOR KIDS (1991)

More than 125 art experiences designed to make children environmentally responsible.

By Mary Ann Kohl and Cindy Gainer. Bright Ring Publishing, P. O. Box 5768, Bellingham, WA 08227.

KEEPERS OF THE EARTH (1988)

A compilation of Native American stories of major North American tribes. Topics include: Creation, Fire, Earth, Seasons, Sky among others. Each story is followed by questions, discussion topics, activities.

By Michael J. Caduto and Joseph Bruchac. Fulcrum, Inc., Golden, CO.
Michael Caduto, P. O. Box 1052, Norwich, CT 05055.

LIVING LIGHTLY IN THE CITY (1982)

A curriculum guide for urban children grades K-3.

Schlitz Audubon Center, 1111 East Brown Deer Road, Milwaukee, WI 53217. $17 plus shipping.

LIVING LIGHTLY ON THE PLANET (1985-1986)

A curriculum guide for children grades 7-9 (Volume I) and for grades 10-12 (Volume II).

Schlitz Audubon Center, 111 East Brown Deer Road, Milwaukee, WI 53217. $17 plus shipping.

LOVE THE EARTH: ENVIRONMENTAL ACTIVITIES FOR YOUNG CHILDREN

Informational and sensory activities for young children.

By Patty Claycomb. Partner Press, Gryphon House, P. O. Box 275, Mt. Ranier, MD 20712.

MARINE SCIENCE CURRICULUM GUIDES (1989)

Curriculum guides for the physical, biological and human ecology of marine habitats. Separate guides for each grade K-1 through grade 7-8.

Tatton Foundation, 1160 Battery Street, Suite 360, San Franciso, CA 94111. $40 for each guide.

NATURESCOPE

Handbooks on a variety of environmental issues suitable for grades K-8.

National Wildlife Federation, 1400 Sixteenth Street NW,
Washington, DC 20036. $7.95 plus $2.95 shipping for each book.

PROJECT LEARNING TREE (1975)

An interdisciplinary environmental education program based on the forest, developed for grades K-12. Book is free in conjunction with participation in a training workshop.

Project Learning Tree, American Forest Council, 1250 Connecticut
Avenue NW, Suite 320, Washington, DC 20036.

PROJECT WILD (1983)

Activities related to wildlife issues suitable for grades K-12. Book is free in conjunction with a training workshop.

Project Wild, P. O. Box 18060, Boulder, CO 80308. (303) 444-2390.

SHARING NATURE WITH CHILDREN (1979) and ***SHARING THE JOY OF NATURE*** (1989)

SHARING NATURE is a collection of nature games (calm/reflective; active/observational; energetic/playful) for children seven years and older. *SHARING THE JOY OF NATURE* adds the concept of "Flow Learning," a method of placing the activities in a thematic sequence.

By Joseph Cornell. Dawn Publications, Nevada City, CA 95959

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FOR FURTHER SUGGESTIONS SEE:

(A) ***GREEN GUIDE***
Sierra Club
730 Polk Street
San Francisco, CA 94109

(B) ***ENVIRONMENTAL EDUCATION RESOURCE GUIDE***
Friends of the Earth
218 D Street, SE
Washington, DC 20003

(C) **EPA ENVIRONMENTAL EDUCATION MATERIALS FOR TEACHERS AND YOUNG PEOPLE (GRADES K-12)** (July 1991)
EPA Communications and Public
Affairs (A-107), 21 K-1009,
401 M Street, SW
Washington, DC 20460.
(202) 260-4484.

AN ENVIRONMENTALLY ANNOTATED BIBLIOGRAPHY OF FICTION BOOKS FOR YOUNG CHILDREN

I believe that before young children learn scientific facts, reasons why and ways how we can protect the natural world they need to become involved in its beauty and rich diversity. Books are not a substitute for digging in the dirt, wading in a stream, or hiking through the woods, but they can be a meaningful way of extending and enriching children's first-hand experiences.

The books I have selected are ones that can give children glimpses into the awe and mystery of our natural world. They are not always designed to teach, but to enchant and inspire. My goal is to have children delight in worms and spiders, wonder about seeds and trees, dream about whales and butterflies, and appreciate all forms of life for their own sake. I hope these books will raise more questions than they answer because questions are the beginning of caring and involvement and thinking creatively about the planet we share.

-statement and bibliography by Debra Orben

Topic: Animals
Title: ***A KETTLE OF HAWKS AND OTHER WILDLIFE GROUPS***
Author: Arnosky, Jim
Illustrator: Arnosky, Jim
ISBN #: 0-688-09279-9
Comments: Jim Arnosky uses the revealing names of animal groups as a starting point for his informative text. This appealing book is illustrated with watercolor paintings.

Topic: Animals
Title: ***KENNETH LILLY'S ANIMALS***
Author: Pope, Joyce
Illustrator: Lilly, Kenneth
ISBN #: 0-688-07696-3
Comments: More than 60 magnificent paintings of animals with their young take readers to habitats all over the planet. The text and paintings invite readers to learn about, understand, and value these animals, many of whom are in danger of extinction.

Topic: Animals, Nocturnal
Title: ***ANIMALS OF THE NIGHT***
Author: Banks, Merry
ISBN #: 0-684-19093-1
Comments: A very simple text and soft luminous pictures introduce a variety of nocturnal animals.

Topic: Animals
Title: ***THE VIEW FROM THE OAK***
Author: Kohl, Herbert and Judith
Illustrator: Bayless, Roger
ISBN #: 0-684-15016-6
Comments: This book explores the unique ways in which a variety of living creatures--ranging from whales to spiders--experiences space, senses time and communicates with others of their species.

Topic: Animals
Title: ***THE SNAIL'S SPELL***
Author: Ryder, Joanne
Illustrator: Cherry, Lynne
ISBN #: 0-7232-6197-0
Comments: This is a story of imagination and insight. The reader is asked to pretend to be a snail and to see the world from another point of view.

Topic: Animals
Title: ***I SING FOR THE ANIMALS***
Author: Gobel, Paul
Illustrator: Gobel, Paul
ISBN #: 0-02-737725-3
Comments: Paul Gobel shares his reverence for the natural world and the importance of respecting all the myriad aspects of nature.

Topic: Animals - Land
Title: ***TWO TINY MICE***
Author: Baker, Alan
Illustrator: Baker, Alan
ISBN #: 0-8037-0973-0
Comments: Large, vivid, detailed illustrations and simple text depict the common animals of fields and woodlands. A fine introduction to the beauty and the wonder of nature for very young children.

Topic: Animals (poetry)
Title: ***ANIMALS ANIMALS***
Author: Carle, Eric
Illustrator: Carle, Eric
ISBN #: 0-399-21774-4
Comments: This is an extensive collection of poetry from sources as diverse as the Bible, Shakespeare, Japanese haiku, African Pygmy, Pawnee Indian, Ogden Nash, Lewis Carroll, etc. Eric Carle's brilliant colorful collage designs celebrate the joyous variety of animals.

Topic: Animals
Title: ***CHICKENS AREN'T THE ONLY ONES***
Author: Heller, Ruth
Illustrator: Heller, Ruth
ISBN #: 0-448-01872-1
Comments: In brilliant pictures and clever rhymes, Ruth Heller describes the fantastic array of animals which lay eggs and are called oviparous.

Topic: Animals
Title: ***DO BEARS HAVE MOTHERS, TOO?***
Author: Fisher, Aileen
Illustrator: Carle, Eric
ISBN #: 0-690-00166-5
Comments: This is a collection of short poems about baby animals, such as Little Deer, Elephant Child, and Penguin Chick. Bright, colorful illustrations accompany the text.

Topic: Animals
Title: ***HOW TO BE A NATURE DETECTIVE***
Author: Selsam, Millicent
Illustrator: Keats, Ezra Jack
Comments: A nature detective uses clues to make fascinating discoveries while walking in the woods, along the beach, or in a park. This informative book encourages young readers to become observant nature detectives.

Topic: Antarctica
Title: ***A TALE OF ANTARCTICA***
Author: Glimmerveen, Ulco
Illustrator: Glimmerveen, Ulco
ISBN #: 0-590-43359-8
Comments: The penguins have always lived in Antarctica. When people come their world is changed and not as beautiful and safe as it used to be.

Topic: Birds
Title: ***WHITE SNOW, BLUE FEATHER***
Author: Downing, Julie
Illustrator: Downing, Julie
ISBN #: 0-02-732530-X
Comments: A young child delights in exploring the winter world. This simple text is enhanced by big bold illustrations.

Topic: Birds
Title: ***FEATHERS FOR LUNCH***
Author: Ehlert, Lois
Illustrator: Ehlert, Lois
ISBN #: 0-15-230550-5
Comments: Young children will delight in the antics of the cat as he prowls after his lunch and encounters 12 common birds. The detailed glossary at the back of the book is a great introduction for bird watchers.

Topic: Birds
Title: ***OWL MOON***
Author: Yolen, Jane
Illustrator: Schoenherr, John
ISBN #: 0-590-42044-5
Comments: In this Caldecolt award winning book a child and his father search the winter woods for the sight of a wondrous owl. Harmony and peace are reflected in the shared stillness of the night, in the poetic and serene language and in the illustrations.

Topic: Deserts
Title: ***THE DESERT IS THEIRS***
Author: Baylor, Byrd
Illustrator: Parnall, Peter
ISBN #: 684-14266-x
Comments: Byrd Baylor transports the reader to the desert and the shared closeness of people, land, hawks, deer, pack rats, and plants who inhabit this unique and harsh environment.

Topic: Environmental Issues (American Indians)
Title: ***BROTHER EAGLE, SISTER SKY***
Author: words adapted from Chief Seattle
Illustrator: Jeffers, Susan
Comments: This powerful and beautifully illustrated book contains a very simple message. Human beings are only one small part of the web of nature and whatever we do to the web, affects us, too.

Topic: Insects, worms, spiders
Title: ***THE WEB IN THE GRASS***
Author: Freschet, Berniece
Illustrator: Duvoisin, Roger
ISBN #: 684-12956-6
Comments: Shimmering, bright, and detailed illustrations beckon the young reader into the fragile, silent, and busy world of a spider.

Topic: Insects
Title: ***LADYBUG, LADYBUG***
Author: Brown, Ruth
ISBN #: 0-525-44423-8
Comments: Close up illustrations of a simple rhyme invite young children to look closely at the miniature of the ladybug.

Topic: Insects (poetry)
Title: ***JOYFUL NOISE, POEMS FOR TWO VOICES***
Author: Fleischman, Paul
Illustrator: Beddows, Eric
ISBN #: 0-440-84078-3
Comments: This Newberry award winning book is a collection of 14 fascinating poems to act out and recite in the "voices" of insects.

Topic: Insects--Bees
Title: ***THE HONEYBEE AND THE ROBBER***
Author: Carle, Eric
Illustrator: Carle, Eric
ISBN #: 0-399-20767-8
Comments: Vivid moving pictures illustrate the story of a lone honeybee who saves the day when a bear attacks the hive. The story is rewritten in the back of the book with detailed notes to help answer the questions of young listeners.

Topic: Insects
Title: ***THE VERY QUIET CRICKET***
Author: Carle, Eric
Illustrator: Carle, Eric
ISBN #: 0-399-21885-8
Comments: This is a multi-sensory book illustrated with bold textured art. Young children will delight in meeting all the insects the cricket encounters and hearing him chirp at the end of the story.

Topic: Insects
Title: ***FIREFLIES***
Author: Brinckloe, Julie
Illustrator: Brinckloe, Julie
ISBN #: 0-02-713310-9
Comments: This is a sensitive description of the wonder and excitement of catching fireflies and the joy and sorrow of releasing them again to freedom.

Topic: Mammals, muskrats
Title: ***COME OUT MUSKRATS***
Author: Arnosky, Jim
Illustrator: Arnosky, Jim
ISBN #: 0-688-05457-9
Comments: Jim Arnosky uses very simple text and large illustrations to describe a day in the life of a muskrat.

Topic: Mammals, beavers
Title: ***BEAVER AT LONG POND***
Author: George, William T. and George, Lindsay Barrett
Illustrator: George, Lindsay Barrett
ISBN #: 688-07106-6
Comments: Large sensitive illustrations depict dusk at Long Pond. Most of the animals have settled down for the night but the nocturnal beaver is just beginning his activities.

Topic: Mammals, beavers
Title: ***BEAVER MOON***
Author: Miles, Miska
Illustrator: Schoenherr, John
ISBN #: 0-316-57018-4
Comments: An old beaver finds a new home in an abandoned lodge. Miska Miles describes the ways of the beaver with a realistic and dramatic story.

Topic: Mammals
Title: ***ANIMALS BORN ALIVE AND WELL***
Author: Heller, Ruth
Illustrator: Heller, Ruth
ISBN #: 0-448-01822-5
Comments: With vivid colors and verse Ruth Heller describes a myriad collection of wonderful animals known as mammals.

Topic: Mammals, squirrels
Title: ***SQUIRRELS***
Author: Wildsmith, Brian
Illustrator: Wildsmith, Brian
Comments: With large, bright illustrations Brian Wildsmith encourages young children to take a closer look at those fascinating, scampering creatures called squirrels.

Topic: Nature Appreciation (poetry)
Title: ***RING OF EARTH***
Author: Yolen, Jane
Illustrator: Wallner, John
ISBN #: 0-15-267140-4
Comments: A sensitive naturalist and author uses poetry to describe the cycles of nature and the circle of seasons.

Topic: Nature Appreciation (poetry)
Title: ***COME ALONG***
Author: Caudill, Rebecca
Illustrator: Raskin, Ellen
ISBN #: 0-03-088504-3
Comments: This is a book of original haiku that celebrates the beauty of nature and the changing seasons. "Come along children./ We'll roam meadow and mountain/ And bring home treasure."

Topic: Nature Appreciation
Title: ***haiku: the mood of earth***
Author: Atwood, Ann
Illustrator: Atwood, Ann
ISBN #: 0-684-12494-7
Comments: Sensitive photographs and moving haiku focus on the variety and beauty in nature.

Topic: Oceans
Title: ***DARK AND FULL OF SECRETS***
Author: Carrick, Carol
Illustrator: Carrick, Donald
ISBN #: 0-89919-271-8
Comments: A young boy explores the mysterious world under the sea.

Topic: Personal Responsibility
Title: ***THE KING'S FOUNTAIN***
Author: Alexander, Lloyd
Illustrator: Keats, Ezra Jack
ISBN #: 0-525-44537-4
Comments: This is the story of a poor, humble man who finds the courage and determination to challenge the king and speak for what he knows is right.

Topic: Personal Responsibility
Title: ***MISS RUMPHIUS***
Author: Cooney, Barbara
Illustrator: Cooney, Barbara
ISBN #: 0-440-84411-8
Comments: Alice Rumphius has many goals for her life, but her grandfather reminds her that she must also do something to make the world more beautiful.

Topic: Plants
Title: ***MILKWEED DAYS***
Author: Yolen, Jane
Illustrator: Cooney, Gabriel Amadeus
ISBN #: 0-690-01250-0
Comments: Young children will enjoy the beautiful photographs and simple but insightful text that describes the sights, sounds, and smells of summer and the special secrets of milkweed.

Topic: Pollution
Title: ***JUST A DREAM***
Author: Van Allsburg, Chris
Illustrator: Van Allsburg, Chris
ISBN #: 0-395-53308-2
Comments: A young boy is careless and indifferent to his surroundings until he has a dream about a future earth devastated by pollution.

Topic: Pollution
Title: ***THE LORAX***
Author: Dr. Seuss
Illustrator: Dr. Seuss
ISBN #: 0-394-823337-0
Comments: In this modern classic we meet the Once-ler and the Lorax who speaks for the trees. This moving tale written in catchy rhymes speaks to the Once-ler in all of us. Dr. Seuss asks the reader, "Who will care enough to make the future better, not just for people but for all life on earth?"

Topic: Pollution
Title: ***PROFESSOR NOAH'S SPACESHIP***
Author: Wildsmith, Brian
Illustrator: Wildsmith, Brian
ISBN #: 0-19-279741-7
Comments: Professor Noah's Spaceship is designed to rescue the endangered animals from their forest which is threatened by pollution and burning.

Topic: Pollution
Title: ***THE WUMP WORLD***
Author: Peet, Bill
Illustrator: Peet, Bill
ISBN #: 0-395-31129-2
Comments: The Wump World was a small world of grassy meadows, clumps of trees, and a few rivers and lakes. It was perfect for the Wumps until the Pollutians came. This is a clever and humorous parable about pollution and the destruction of the natural environment.

Topic: Rainforests
Title: ***THE GREAT KAPOK TREE, A TALE OF THE AMAZON RAIN FOREST***
Author: Cherry, Lynne
Illustrator: Cherry, Lynne
ISBN #: 0-15-200520-x
Comments: This book gives readers a glimpse of the intricate beauty of the rain forest and the incredible creatures that inhabit it. It reminds us that our actions today will affect the future.

Topic: Reptiles, Amphibians, Turtles
Title: ***TURTLE POND***
Author: Freschet, Berniece
Illustrator: Carrick, Donald
ISBN #: 684-12326-6
Comments: This is a simple adventure story of eleven newly hatched turtles who must travel the short, but dangerous distance to the nearest pond.

Topic: Seashore
Title: ***WHEN THE TIDE IS LOW***
Author: Cole, Shelia
Illustrator: Frierson, Virginia Wright
ISBN #: 0-688-04066-7
Comments: A mother talks to her young child and describes the intricate and wonderful creatures they will discover when the tide is low. A detailed glossary at the back of the book describes the animals for young naturalists.

Topic: Trees
Title: ***THE MAN WHO PLANTED TREES***
Author: Giono, Jean
Illustrator: McCurdy, Michael
ISBN #: 0-930031-06-7
Comments: This inspiring book describes how one person can make a difference. It is the true story of Elzeard Bouffier, a quiet, determined shepherd, who plants 100 acorns each day in a barren mountain area of France.

Topic: Trees
Title: ***THE OLD STUMP***
Author: Hawkinson, John
Illustrator: Hawkinson, John
Comments: In this story an old stump is the setting for a variety of natural events and adventures.

Topic: Trees
Title: ***A TREE IS NICE***
Author: Udry, Janice May
Illustrator: Simont, Marc
Comments: With poetic simplicity and beauty the author delights in the wonders of trees.

GOOD ENVIRONMENTAL FICTION BOOKS FOR KIDS OF ALL AGES

Title: ***A CLEARING IN THE FOREST***
Author: Carrick, Carol
Illustrator: Carrick, Donald
ISBN #: 73-125467
Main points about the environment: People and animals need to be able to live harmoniously. Is it really necessary to be building on all the vacant land which exists?
Story line: A man and his son move into the forest--the animals living there are pushed out of their homes. The animals respond by trying to push the humans out of their new house by sending in the mice to steal cheese and other food, by having the squirrels put leaves in the chimney, or by having the woodchucks eat the vegetables in the garden. A snowfall comes and the animals lose their sources of food. The people see this and help out by sharing their own food and the animals soon realize that the people are their friends. They each decide to work together harmoniously to survive.

Title: ***ARTHUR'S NEW POWER***
Author: Hoban, Russell
Illustrator: Barton, Byron
ISBN #: 0-690-01370
Main points about the environment: The use of energy--our energy resources are not unlimited--we need to conserve and be aware of usage.
Story line: A house full of crocodiles enjoy all the energy in the world, until they start blowing fuses. The family decides to give up use of their appliances and the house suddenly becomes very quiet. The son, Arthur, soon develops a liking to reading books!

Title: ***FAREWELL TO SHADY GLADE***
Author: Peet, Bill
Illustrator: Peet, Bill
Main points about the environment: The effect of building and construction on the environment and the animals and people living in it.
Story line: A group of small animals are living in a field. They awake one day to the sound of construction vehicles tearing up the field where they live. The animals decide to "hop" a train and soon get an overview of the surrounding environment and what effect water and air pollution are having on planet earth.

Title: ***FLY HOMER FLY***
Author: Peet, Bill
Illustrator: Peet, Bill
Main points about the environment: Air pollution and smog, especially in cities.
Story line: A pigeon lives in the city and flies around examining the smog and air pollution and the many causes of it.

Title: ***JUST A DREAM***
Author: Van Allsburg, Chris
Illustrator: Van Allsburg, Chris
ISBN #: 0-395-53308-2
Main points about the environment: The way we live our lives today will impact how we will be able to live in the future.
Story line: A child learns, by visiting the future in a dream, that the world may not become as wonderful as he has imagined. He awakens to realize that his lifestyle must change to reverse the trend he has glimpsed in his dream.

Title: ***THE GREAT KAPOK TREE***
Author: Cherry, Lynne
Illustrator: Cherry, Lynne
Main points about the environment: Preservation of the rain forest, endangered wildlife, oxygen production, and the food chain.
Story line: A man is about to chop down a great Kapok tree in the Amazon rain forest when he gets tired and falls asleep. Many different animals and an Indian boy visit him and one by one explain why he shouldn't destroy the tree. Upon awakening he is surrounded by creatures who have made him understand that what he does today affects the future. He decides to spare the tree and leaves the forest undisturbed.

Title: *THE MOUNTAIN*
Author: Parnall, Peter
Illustrator: Parnall, Peter
Main points about the environment: The importance of man being sensitive to the surrounding environment.
Story line: The author shows the growth and development of the flowers, trees, and animals that make up a mountain in the West. Soon, it becomes a national park, is overused, and is slowly overrun by humans, until we don't even notice the original flowers and trees anymore.

Title: *ONCE THERE WAS A TREE*
Author: Romanova, Natalie
Illustrator: Spirin, Gennady
ISBN #: 0-8037-0235-3
Main points about the environment: Who owns a tree stump, the animals living in it or humans?
Story line: Lightning splits a tree in half, then it is further cut down by humans. The remaining stump gets lived in, traveled on, and visited by many interesting creatures, including humans.

Title: *PROFESSOR NOAH'S SPACESHIP*
Author: Wildsmith, Brian
ISBN #: 0-19-279741-7
Main points about the environment: Pollution and destruction of the air and the forest. If earth becomes overpolluted, would you consider leaving it?
Story line: After people have polluted a forest, the animals find a professor who is building a spaceship. He decides to take them to a planet where they will find a clean forest once again.

Title: *THE HAUNTED GHOST*
Author: Byfield, Barbara
Illustrator: Byfield, Barbara
ISBN #: 0-385-01408-2
Main points about the environment: The concerns about toxic waste materials which come out of factories and the effect they have on the water supply.
Story line: Master spy Sir Roger begins having nightmares while sleeping in his dungeon. A putrid, foul slime is found glowing a ghastly green color, sneaking underground into the dungeon from the new factory in town. Eventually it is discovered that this factory has been pouring waste materials into the town's once beautiful lake.

Title: *THE SEAL & THE OIL SLICK*
Author: Freeman, Don
Illustrator: Freeman, Don
ISBN #: 670-62659-7
Main points about the environment: People need to be careful when transporting oil. Oil spills can lead to the destruction of marine life.
Story line: A young, curious seal pup smells oil. His family tells him not to go in the water, but he ventures in and gets stuck in an oil slick. Eventually he is rescued, but the family decides they must move away.

Title: *THE WUMP WORLD*
Author: Peet, Bill
Illustrator: Peet, Bill
Main points about the environment: Natural resources can't simply be replaced and replenished. What and how you live now will impact future generations. The earth is not disposable.
Story line: The Wump World is a peaceful, clean grassy land of small simple creatures which now faces devastation when the pollutians invade their world. These aliens quickly industrialize the land, creating air, water, and noise pollution. Once they realize the negative results of their actions, they decide to move to another land, disposing of the wump's land which is now unpleasant to live in.

Title: *WILSON'S WORLD*
Author: Hurd, Edith Thatcher
Illustrator: Hurd, Clement
ISBN #: 06-022750-8
Main points about the environment: The effects of overpopulation on the environment. People need to think about what we are doing to the planet.
Story line: Wilson paints a picture of his world--with a big beautiful sun, flowers, and animals. Then he slowly adds in people who multiply until they are all over--the next step is signs of pollution created by the people, and soon his clean, picturesque world becomes destroyed.

ADDITIONAL TITLES

Title: ***BLACKBIRD SINGING***
Author: Bunting, Eve
Illustrator: Gammell, Stephen
ISBN #: 0-02-715360-6

Title: ***CHASING TROUBLE***
Author: Luger, Harriet
Illustrator: De Groat, Diane
ISBN #: 0-670-21291-1

Title: ***HOOK A FISH, CATCH A MOUNTAIN***
Author: George, Jean
ISBN #: 0-525-32155-1

Title: ***LET A RIVER BE***
Author: Cummings, Betty Sue
ISBN #: 0-689-30635-0

Title: ***ALIEN ART***
Author: Dickson, Gordon
ISBN #: 0-525-24505-6

Title: ***BEAVER VALLEY***
Author: Edmonds, Walter
Illustrator: Morrill, Leslie

Title: ***CAP'N SMUDGE***
Author: Cosgrove, Stephen

Title: ***DAWN***
Author: Shulevitz, Uri
Illustrator: Shulevitz, Uri

Title: ***FAREWELL TO THE FARIVOK***
Author: Hartwick, Harry
Illustrator: Ohlsson, I. B.

Title: ***GOING TO THE SUN***
Author: George, Jean
ISBN #: 0-06-021941-6

Title: ***MISS PICKERELL & THE SUPERTANKER***
Author: MacGregor, Ellen
Illustrator: Geer, Charles
ISBN #: 0-07-044588-5

Title: ***NOAH'S ARK***
Author: Haley, Gail
Illustrator: Haley, Gail

Title: ***PELICAN***
Author: Wildsmith, Brian
ISBN #: 0-394-85668-6

Title: ***SILVER WOLF***
Author: Dixon, Paige
Illustrator: Brewster, Ann
ISBN #: 72-86932

Title: ***THE OWL & THE WOODPECKER***
Author: Wildsmith, Brian

Title: ***THE TALKING EARTH***
Author: George, Jean
ISBN #: 0-06-021975-0

Title: ***WHAT CAN YOU MAKE OF IT?***
Author: Brandenberg, Franz
Illustrator: Aliki
ISBN #: 0-688-80083-1

Title: ***WHO REALLY KILLED COCK ROBIN***
Author: George, Jean
ISBN #: 0-525-42700-7

Title: ***SPACE GARBAGE***
Author: Asimov

Title: ***THE NIGHT THE LIGHTS WENT OUT***
Author: Freeman, Don

Title: ***WHAT I DID LAST SUMMER***
Author: St. John, Glory
Illustrator: McCully, Emily
ISBN #: 0-689-30666-0

List and notes prepared by Bob Vlahakis, Sierra Club
National Education Committee

SIERRA CLUB
RESOURCE GUIDE

Environmental Books

Books like *Silent Spring* and *The Population Bomb* thrust previously ignored environmental concerns into the public consciousness. While all the books listed here have not had as dramatic an impact, they have all been important in educating and persuading the public about critical environmental issues. This list is just a beginning, and includes authors and titles that conservation leaders feel are most essential to understanding the environmental movement.

Some of the books mentioned may be out of print. The original dates of publication are listed; a library or bookstore can help you locate them.

Breaking New Ground. Gifford Pinchot. 1947.

Cadillac Desert: The American West and Its Disappearing Water. Marc Reisner. 1986.

The Closing Circle: Nature, Man and Technology. Barry Commoner. 1971.

Deep Ecology. Bill Devall. 1985.

Desert Solitaire: A Season in the Wilderness. Edward Abbey. 1981.

An Environmental Agenda for the Future. Leaders of America's Foremost Environmental Organizations. 1985.

Ecoscience: Population, Resources and Environment. Anne Ehrlich, Paul Ehrlich and John Holdren. 1977.

Encounters with the Archdruid. John McPhee. 1971.

The Fate of the Earth. Jonathan Schell. 1982

Footprints on the Planet: A Search for an Environmental Ethic. Robert Cahn. 1978

The Immense Journey. Loren Eisley. 1957.

John Muir and His Legacy (The American Conservation Movement). Stephen Fox. 1981.

The Lives of a Cell: Notes of a Biology Watcher. Lewis Thomas. 1974.

Man and Nature. George Perkins Marsh. 1864.

Mountains Without Handrails: Reflections on the National Parks. Joseph Sax. 1980.

My First Summer in the Sierra. John Muir. 1911.

Our Common Future. World Commission on Environment and Development. 1987.

Our National Parks. John Muir. 1901.

The Population Explosion. Paul R. Ehrlich and Anne H. Ehrlich. 1990.

Progress As If Survival Mattered. Friends of the Earth. 1977.

The Quiet Crisis. Stewart Udall. 1963.

The River that Flows Uphill: A Journey from the Big Bang to the Big Brain. William Calvin. 1987.

A Sand County Almanac. Aldo Leopold. 1949.

Silent Spring. Rachel Carson. 1962.

Small Is Beautiful: Economics As If People Mattered. E.F. Schumacher. 1973.

Soft Energy Paths. Amory Lovins. 1977.

This Is the American Earth. Ansel Adams and Nancy Newhall. 1960.

Traces on the Rhodian Shore: Nature and Culture in Western Thought From Ancient Times to the End of the Eighteenth Century. Clarence Glacken. 1973.

The Unsettling of America: Culture and Agriculture. Wendell Berry. 1977.

Walden. Henry David Thoreau. 1854.

Walking Softly in the Wilderness: The Sierra Club Guide to Backpacking. John Hart. 1977.

Wilderness and the American Mind. Roderick Nash. 1982.

Environmental Education Materials

Following is a selection of organizations that publish environmental education materials:

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AMERICAN HUMANE ASSOCIATION
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(202) 797-6800

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7515 N.E. Ankeny Rd.
Ankeny, IA 50021
(515) 289-2331

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1101 - 14th St., N.W., Suite 725
Washington, DC 20005
(202) 371-1808

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Following is a selection of organizations that distribute environmental films:

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FILM DISTRIBUTION CENTER
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(206) 820-2592

GREEN MOUNTAIN POST FILMS
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Turner Falls, MA 01376
(413) 863-4754

MICHIGAN MEDIA
University of Michigan
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Ann Arbor, MI 48109
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MODERN TALKING PICTURES
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Sierra Club Audio-Visuals Order Form

■ SLIDE SHOWS

Each show consists of a 35mm slide carousel for Kodak projectors and a voice and music soundtrack on cassette tape. The tapes have audible tones to cue the advance of slides. We Are the Sierra Club, Acid Rain: The Choice Is Ours, *and* The Tropical Rainforest *also include tapes with inaudible tones for automatic advance of slides when using a Wollensak or similar playback equipment.*

Acid Rain: The Choice Is Ours

Describes the causes of acid rain and its impacts on human health, lakes, fisheries, agriculture, and buildings. Also proposes corrective measures.
20 minutes, produced in 1980 by the Friends of the Boundary Waters Wilderness
Rental: $15.00 member/$20.00 non-member (one-week booking)

The Tropical Rainforest: Diverse, Delicate, Disappearing

Explores the complex ecology of tropical rainforests, highlighting plant and animal species, and indigenous peoples. Explains the causes and effects of forest destruction and suggests protective actions to be taken.
30 minutes, produced in 1988 by the Sierra Club's International Committee
Rental: $15.00 member/$20.00 non-member (one-week booking)

We Are the Sierra Club

An overview of the Sierra Club's history, conservation efforts, and outing program, with emphasis on opportunities for member participation.
14 minutes, produced in 1985 by the Sierra Club
Rental: $15.00 member/$20.00 non-member (one-week booking)
Sale: $85.00

■ VIDEOS (VHS only)

Arctic Refuge: Treasure Of the North

Highlights the importance of protecting Alaska's Arctic National Wildlife Refuge from the damaging effects of oil development. Features interviews with Native Alaskans, comments of a caribou biologist, and scenes of the polluting of the nearby Prudhoe Bay oil field.
25 minutes, produced in 1987 by the Northern Alaska Environmental Center
Rental: $10.00 member/$15.00 non-member (one-week booking)

The Endangered Species Act: A Commitment Worth Keeping

The Endangered Species Act is the primary guardian of the nation's biodiversity, and now on the eve of the Act's reauthorization the stakes have never been greater. This video, featuring footage of endangered wildlife, highlights the importance of strengthening the Endangered Species Act and recommends ways you can help.
8 minutes, produced in 1992 by the National Audubon Society
Rental: $10.00 member/$15.00 non-member (one-week booking)

The Forest Roads Program: Destroying Trees and Trails

Describes how the U.S. Forest Service road-building program is destroying wildlife habitat and recreational resources and suggests how citizens can help reverse this policy.
21 minutes, produced in 1986 by the National Trails Coalition
Rental: $10.00 member/$15.00 non-member (one-week booking)

Global Warming Activist Video

A special training video comprised of 7 public service announcements produced by Sierra Club in 1990 and an 11-minute global warming documentary produced by the Union of Concerned Scientists, which presents the threats to our environment posed by global warming, and the solutions.
Rental: $10.00 member/$15.00 non-member (one-week booking)

Grand Canyon: The Price of Power

Destructive water flows caused by the upstream Glen Canyon Dam are damaging the Grand Canyon ecosystem. This video explains the threat, and suggests what you can do about it.
18 minutes, co-produced in 1992 by Sierra Club and P.O.V. West
Rental: $10.00 member/$15.00 non-member (one-week booking)

The Hells Canyon Country: America's Next National Park or a Lost Legacy?

Presents the great beauty and the great threats to this special part of northeastern Oregon and west central Idaho, which includes the deepest river carved canyon on Earth.
28 minutes, produced in 1991 by Hells Canyon Preservation Council.
Rental: $10.00 member/$15.00 non-member (one-week booking)

Re-Use it or Lose it

This documentary video examines the components of the solid waste stream and explains the reasons for recycling a wide range of materials. It looks at recycling programs in various communities, what they have achieved and the problems they are encountering.
20 minutes, produced in 1990 by Doug Prose
Rental: $10.00 member/$15.00 non-member (one-week booking)

The Silent Explosion

This film focuses on the consequences of overpopulation on the world's economies, environments, and food supplies. It provides examples of solutions with film footage from developing countries. An excellent tool for stimulating student discussion and increasing awareness of population issues.
20 minutes, produced in 1987 by the Population Institute
Rental: $10.00 member/$15.00 non-member (one-week booking)

The Tropical Rainforest: Diverse, Delicate, Disappearing

(A slide presentation on videotape. See description under Slide Shows.)
Rental: $10.00 member/$15.00 non-member (one-week booking)
Sale: $20.00 member/$25.00 non-member

We Are the Sierra Club

(A slide presentation on videotape. See description under Slide Shows.)
Rental: $10.00 member/$15.00 non-member (one-week booking)
Sale: $20.00 member/$25.00 non-member

What Is The Limit?

Produced for the National Audubon Society, this film surveys the environmental problems created by modern industry and agriculture. It also points to rapid population growth as a factor responsible for threatening the prosperity of all people, and warns of a population crash if births continue to rise and the Earth's carrying capacity is exceeded. The film concludes with a discussion of the responsibility of developed countries, focusing in particular on the current U.S. policy on family planning.
23 minutes, 1987
Rental: $10.00 member/$15.00 non-member (one-week booking)

■ FILMS

Alaska: Land in Balance

Alaska is so spectacularly beautiful that many feel the whole state should be a national park. Judy Irving and her crew took over a year to create this sensitive and poetic picture of Alaska, which captures its extraordinarily rich diversity of mountains, lakes, rivers, and glaciers, as well as its caribou, bear, and salmon. It also features the native people. Winner, Chris Bronze Plaque, Columbus Film Festival; Bronze Award, International Film and TV Festival, New York.
25 minutes, for elementary school through adult, 1977
Rental: $15.00 (one-day booking)
Sale: $350.00

A Closer Look, with Michael Godfrey

Filmed on location in North Carolina near the home of author, Michael Godfrey, and based on his Sierra Club book of the same title, the film takes "a closer look" at what can be learned from observing the natural world around us. It focuses on two important cycles, the biological calendar year and the longer cycle of natural plant succession. Winner, CINE Golden Eagle.
"A beautifully photographed film." — Landers Film Reviews
28 1/2 minutes color, for all audiences, 1979
Rental $15.00 (one-day booking)
Sale: $350.00

Coasts For the Future: Saving America's Shores

This film assembles the work of a number of photographers in a poetic study of a coastline, and how coastal values — recreation, nature study, and spiritual renewal — are threatened by development and pollution. Accompanied by an understated narration consisting entirely of brief quotations from such writers as Robinson Jeffers, Henry Beston and Nancy Newhall. Produced in connection with the successful effort to create adequate coastline protection legislation in California, the film builds viewer concern for coastlines everywhere.
8 1/2 minutes, for elementary through adult, 1979
Rental: $10.00 (one-day booking)
Sale: $155.00

Glen Canyon

Glen Canyon was a uniquely beautiful stretch of the Colorado River. Now, everything shown in this film is beneath the surface of Lake Powell, lost for this and all future generations. "This is a quiet but eloquent public message suitable for schools and public libraries, while the fine record of the matchless beauty of Glen Canyon should be preserved in museums and university libraries. *Glen Canyon* is a visual and emotional experience seldom possible on film, and as a plea for sensible conservation it is not likely to be equalled very often. Highly recommended as a film every adult ought to see." — Landers Film Review.
26 minutes, for junior high school through adult, 1965
Rental: $15.00 (one-day booking)

The Grand Canyon

Superb photography reveals the Grand Canyon to be a universe in and of itself and shows that a living river, an undammed Colorado River, is vital to keeping the Canyon's natural systems alive. When this film was produced, there were proposals to build two dams in the Canyon. This film was instrumental in stopping these dams and preserving the Canyon for future generations.
26 minutes, for all audiences, 1967
Rental: $15.00 (one-day booking)

Nature Next Door

Informative narrative and fine photography combine in an educational program that shows how insects, reptiles, birds, plants, and mammals relate to one another in a common area. In the words of the narrator, "It is something children really know and many other people have almost forgotten, that wild creatures still live around us, in the woods and fields, in vacant lots, on wild land. No one has cut trees here or plowed the ground. Wild creatures are everywhere, most of them hiding, in trees and grass, in water and soil."
28 minutes, for elementary through junior high school, 1962
Rental: $15.00 (one-day booking)
Sale: $350.00

No Room for Wilderness?

Professor Robert C. Stebbins uses examples from Africa to demonstrate the workings of a natural ecology and the devastating impacts of technology and exploding population on that environment. A sound track of indigenous African music, and bird and animal sounds enhances the film's impact. Recommended by Landers Film Review.
26 minutes, for upper grade school through adult, 1968
Rental: $15.00 (one-day booking)

Off-Road Controversy

Across America there is increasing controversy over the use of off-road vehicles in wilderness areas, deserts, mountains, beaches, and forests. The film examines individual rights to property and privacy, varying tastes in recreation and leisure activities, and ecological damage to fragile environments. It shows that the land belongs to all of us, including our children, and that certain characteristics of open spaces should be preserved and protected. Bronze Award, N.Y. International Film and TV Festival; Finalist, EFLA, American Film Festival.
27 minutes, for junior high school through adult, 1973
Rental: $15.00 (one-day booking)
Sale: $350.00

Oil! Spoil! Patterns in Pollution

Industrialized society's demands for oil, gas, and coal have resulted in the rash exploitation of our natural resources — and in terrible environmental disasters. This film discusses America's energy problems with striking impact. *Oil! Spoil!* is one of the Sierra Club's most effective films. Winner, CINE Golden Eagle Award.
17 minutes, for junior high school through adult, 1972
Rental: $12.50 (one-day booking)
Sale: $275.00

The Redwoods

The Redwoods stands out among Sierra Club's award-winning films; it received the Academy Award for Best Short Documentary. As coveted as that award was, the creation of Redwoods National Park was more meaningful. *The Redwoods* was a major factor in helping to build public and Congressional support for park designation. *The Redwoods* provides a conservation message for all ages and for all the ages. "...[A] poetically timed journey through one of nature's most beautiful and wonderful forest areas," says Film News Review. Winner, CINE Golden Eagle Award.
20 minutes, for junior high school through adult, 1968
Rental: $12.50 (one-day booking)

Two Yosemites

In 1914, Yosemite Valley's scenic twin, Hetch Hetchy, was flooded to provide electricity for San Francisco. The waterfalls of both valleys plunged down to exquisite meadows, woodlands, and clear streams; those of Hetch Hetchy now fall down to an artificial wasteland whose beauty is lost for all time. This film provides grim documentary evidence of what can happen when exploiters gain enough influence to cheat the public. David Brower's artistic photography records for all the tragedy of the lost Yosemite.
10 minutes, for junior high school through adult, 1967
Rental: $10.00 (one-day booking)
Sale: $125.00

■ FILMSTRIPS

The Interdependence of Nature

This four-part program emphasizes the importance of conservation by demonstrating interrelationships in nature. Part 1 explains the interdependence of various branches of nature. Part 2 shows how a wildlife community is preserved through a balance of nature. Part 3 discusses the effects of the changing seasons on wildlife and humans. Part 4 shows how natural resources are destroyed through reckless or careless use. Includes 4 filmstrips and 2 cassettes.

For grade levels 4 - 6, produced by Universal Education and Visual Arts
Rental fee: $12.00 (two-week booking)

John Muir

John Muir, naturalist and mountaineer, father of the modern conservation movement, was instrumental in the creation of Yosemite National Park and led many early conservation battles. In 1892, he and a group of his friends founded the Sierra Club and he became its first president. This program tells the story of his life, in his own words and those of others. Includes 1 filmstrip and 1 cassette.

For grade levels 5 - 7, produced by the Great American Film Factory
Rental fee: $12.00 (two-week booking)

The Lorax

This faithful adaptation of the Dr. Seuss book is an excellent introduction to ecology and conservation. Children will respond to this dramatic story as they watch the Truffula trees chopped down and a once-beautiful forest become a smog-covered dump. The loud and dire warnings of the Lorax are ignored for short-term monetary gains. Includes 2 filmstrips and 2 cassettes.

For grade levels 2 - 5, produced by Random House, Inc.
Rental fee: $12.00 (two-week booking)

The Old Bullfrog

This program follows in text and illustration the book by the same name written by Bernice Freschet. It is an engaging lesson in nature study about a wise old bullfrog who outwits a hungry heron. Includes 1 filmstrip and 1 cassette.

For grade levels K - 1, produced by Charles Scribner's Sons and Miller-Body Productions, Inc.
Rental fee: $12.00 (two-week booking)

Will They Survive?

Today the single largest threat to wildlife is the destruction of animal habitats by humans. This two-part program on endangered species discusses in detail the present situations of the American alligator, the bald eagle, the California condor, the whooping crane, the grizzly bear, the black-footed ferret, and the peregrine falcon. It examines the reasons these animals are endangered, the efforts that have been made to save them, and their chances for survival. Includes 2 filmstrips and 2 cassettes.

For grade levels 3 - 7, from the Aerie Nature Series by Perry Conway, produced by Center Productions, Inc.
Rental fee: $12.00 (two-week booking)

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11/92

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(202) 673-5111

NUCLEAR REGULATORY COMMISSION
Washington, DC 20555
(301) 492-7000

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION
200 Constitution Avenue, NW
Washington, DC 20210
(202) 523-6091

ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT (U.S. OFFICE)
2001 L Street, NW/700
Washington, DC 20036
(202) 785-6323

THE UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)
1 UN Plaza
New York, NY 10017
(212) 906-5328

THE UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)
Room DC2-0816
United Nations
New York, NY 10017
(212) 963-8138

THE UNITED NATIONS POPULATION FUND (UNPFA)
220 East 42nd Street
New York, NY 10017
(212) 850-5600

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
P. O. Box 7921
Madison, WI 53707
(608) 266-2621

WORLD BANK
1818 H Street, NW
Washington, DC 20433
(202) 477-1234

SECTION L

Sierra Club Issue Committee Information and Resources for Teachers

LOCAL SIERRA CLUB CHAPTER-SCHOOL PARTNERSHIPS

Many local Sierra Clubs have found successful ways of offering the schools in their area help with their environmental education efforts. Other groups are eager to find a niche they might fill in their community's E.E. efforts. You might want to contact your local chapter to see if they have any programs underway. If they do not, it is possible that you and they might want to develop a partnership in connection with one of the ideas listed below:

1. Develop a directory of community or state environmental education resources.
2. Prepare a brochure on local or state endangered animals.
3. Publish a newsletter containing updates on major environmental topics.
4. Put together a slide program on a local problem that would be of special interest to the students.
5. Develop a theatrical program about an environmental topic, or about the history and ecology of the local area. Present it at the various schools in the community.
6. Set up a wildlife rescue shelter or work with one already established. Present programs with these animals at schools.
7. Help set up school gardens.
8. Accompany teachers on field trips to local natural areas and assist with interpretation.
9. Conduct a workshop for teachers to help them detect bias or inaccuracies in some of the free curriculum materials they receive from various sources.
10. Sponsor Project Wild workshops.
11. Provide scholarships for teachers to attend Sierra Club's annual teacher/family summer workshops in the Sierra Nevada.
12. Sponsor an inter-high school environmental education or ecology club.
13. Conduct a youth conference on the environment. If possible, arrange for the conference to involve two days, with an overnight component.
14. Set up a "hot line" which would offer up-to-date information on local environmental issues.
15. Prepare traveling suitcases containing realia demonstrations and/or experiments on a variety of topics.
16. Conduct a weekly radio program consisting of interviews with local environmental specialists, a local bird watch report, short features, etc.

SIERRA CLUB NATIONAL ISSUE COMMITTEES

Sierra Club has a number of national committees that work on issues of continuing importance to the Club. Those concerned with conservation issues carry out such tasks as conducting research, recommending policy to the Board and communicating with local Chapters and other Club entities. A list of those Committees follows:

- Agriculture
- Air Quality
- *Alaska Task Force
- Biotechnology Task Force
- Coastal
- Energy
- Great Lakes
- *Hazardous Material
- International
- James Bay Task Force
- Marine
- Military Impacts
- Native American Sites
- *Population
- *Public Lands
- *Solid Waste Management
- Urban Environment
- Water Resources
- Wetlands
- Wildlife

An asterisk indicates that the committee publishes newsletters either on a regular or an irregular basis. Many other committees also produce occasional newsletters. Call (1-415-776-2211) or write the national office to see if there is a publication on your issue of special interest.

One especially noteworthy publication, *The National News Report (NNR)*, is produced by the Conservation Committee. These four-page newsletters contain current status of the whole range of issues focusing on legislation. For information about *NNR*, please see the subscription form below.

Twenty-four times a year, the **NNR** shines a spotlight on environmental issues . . . and what our elected leaders are doing about them. It brings you environmental news ignored by the mass media, together with perspectives from Sierra Club leaders throughout the United States and Canada.

But the **NNR** does something else. It lets you know what *you* can do to make a critical difference. That's why we call it the resource for environmental action.

One-year subscriptions are $18 for Sierra Club members and $20 for non-members.

Mail this card with check or money order to:

Sierra Club, NNR Subscriptions
P.O. Box 7959
San Francisco, CA 94120-7959

Find out what's happening to the world around you. And find out how you can help save it. Subscribe to the **NNR** today.

NAME ______________________ SIERRA CLUB MEMBER? YES ☐ NO ☐

ADDRESS ______________________ AMOUNT ENCLOSED $ __________

CITY,STATE,ZIP ______________________

SIERRA CLUB
FACT SHEET

1993-1994 National Conservation Campaigns

The Sierra Club works on hundreds of conservation issues — local, regional, national and international. The Sierra Club prioritizes national conservation campaigns in two-year cycles that correspond to the sessions of the U.S. Congress. The Sierra Club's Board of Directors has selected the following major conservation campaigns for 1993-1994:

Permanent Protection of Public Lands

Ensuring that the best of wild America is granted permanent protection has long been a top priority of the Sierra Club. The 103rd Congress offers numerous opportunities to further this goal by making important additions to the National Park and National Wilderness Preservation systems. The Sierra Club will work to enact these key bills: the California Desert Protection Act; strong wilderness bills for Montana, Colorado and Utah; and wilderness designation for the coastal plain of the Arctic National Wildlife Refuge.

Ancient Forests

The fate of the ancient forests of Washington, Oregon and California becomes more dire with each passing day. As much as 90 percent of these virgin forests are gone forever and hundreds of square miles more are cut every year. Home to some of the world's oldest trees — hemlock, cedar, sitka, spruce and sequoia — they are among the world's most biologically diverse ecosystems. The Sierra Club will seek permanent preservation of ecologically sustainable ancient forest preserves in the Pacific Northwest and the Sierra Nevada.

Public Lands Management Reform

America's public land trust has been grossly mismanaged. One lingering source of abuse has been the General Mining Law of 1872, which enshrines mining as the "highest and best use" of virtually all public lands. The Sierra Club seeks to reform the mining law to allow the federal government to deny mining permits in environmentally sensitive areas and require reclamation of mined lands. Other reforms are needed to provide a fair return to the public for its resources and end the practice of transferring public lands to private hands for a token fee.

Across the country, the nation's publicly owned forests are being logged at an unsustainable rate, jeopardizing watersheds, fish and wildlife species, recreational uses and the long-term well-being of the forest ecosystem. This shortsighted exploitation must be replaced with forest management practices that set sustainable cutting levels and preserve the health of the forest.

Endangered Species Act

The Endangered Species Act is the keystone of all efforts to maintain biological diversity in the United States. Since 1973, the Act has helped bring back numerous species from the brink of extinction — the bald eagle and peregrine falcon, for example — and prevented many more from reaching that threshold. More importantly, the Act serves as a barometer of the health of ecosystems by identifying and listing endangered or threatened animal and plant species. A powerful, industry-based coalition has mounted a campaign to weaken the law. With the Endangered Species Act up for reauthorization, the Sierra Club will work to ensure that the law is strengthened to more fully protect our besieged wild heritage.

Population Stabilization

Most of the world's environmental problems can be traced to rapidly growing human population. Yet funding for international family planning consistently lags behind the need to slow this ominous trend. The U.N. Amsterdam Declaration, agreed to in principle by the United States in 1989, sets out specific steps necessary to stabilize world population. The Sierra Club is working to realize one of these goals — worldwide access to birth control — by the year 2000. To accomplish this, the Sierra Club will seek full funding from Congress for the commitments made under the Amsterdam Declaration.

North American Free Trade Agreement

Free-trade agreements promise to increase economic growth, but they also expand the need for international environmental regulation. The North American Free Trade Agreement, as negotiated by the Bush administration, leaves the door wide open for challenges to U.S. efforts to protect the national and global environments. It also fails to address cleanup of the heavily polluted U.S.-Mexico border. The Sierra Club calls for an environmentally responsible trade agreement that promotes the principle of sustainable development.

International Lending Reform

Billions of dollars in loans from multilateral development banks, such as the World Bank, subsidize the ongoing decimation of tropical rain forests, the building of dams that flood thousands of acres of wilderness and the destruction of critical coastal wetlands. Because of the World Bank's persistent failure to implement environmental and sustainable development reforms, the Sierra Club will seek congressional support to withhold or cut U.S. funding for replenishment of the International Development Association of the World Bank, to be considered this year.

Tropical Hardwoods

The disappearance of the world's rain forests is a major factor in global warming, species depletion and desertification. The Sierra Club aims to move foreign governments toward managing their tropical forests in ways that ensure long-term preservation. A first step will be to gain congressional support to expand the International Tropical Timber Agreement to include all woods — temperate, boreal and tropical — and enforceable targets and timetables to ensure the transition to a global timber trade derived only from sustainably managed forests. Congress should also enact legislation that would label imported tropical hardwoods, indicating their country of origin.

Energy

The buildup of greenhouse gases, mainly carbon dioxide, is leading to an unprecedented global warming trend that threatens countless plant and animal species, fragile coastal ecosystems, human health and the world economy.

Raising the Corporate Average Fuel Efficiency (CAFE) standard to 45 miles per gallon from the current 27.5 mpg would not only save oil but would also cut in half the amount of carbon dioxide emitted by the average automobile over its lifetime. The Sierra Club will pursue the passage of higher CAFE standards and other energy efficiency legislation that will slow global warming and move the United States away from its dangerous addiction to oil.

Clean Water/Wetlands

Clean water, essential for life, is often taken for granted. The Clean Water Act of 1972 recognized that this seemingly abundant resource is in fact increasingly under siege. Threatened by agricultural runoff and industrial discharges — especially in communities of color and low-income neighborhoods — water supplies need to be protected for wildlife and people.

The Clean Water Act brought protection to the nation's wetlands for the first time, but did not limit the draining, flooding and devegetation that lead to the destruction of nearly 300,000 acres of this precious resource every year. The Sierra Club will seek a strong reauthorization of the Clean Water Act, one that will achieve "zero discharge" of pollutants, protect critical ecosystems and enforce the law by closing existing loopholes.

Resource Conservation and Recovery Act (RCRA)

As U.S. waste production rapidly increases, landfills are overflowing, while incinerators are neither safe nor effective. In some cases, waste is not regulated at all. In addition, the environmental and health consequences of waste disposal are disproportionately borne by low-income neighborhoods and communities of color. The Sierra Club strongly advocates finding ways to reduce the generation of waste itself — the only cost-effective, environmentally benign solution that does not involve no-win decisions over where to build dangerous, polluting facilities.

Unfortunately, RCRA, the nation's major weapon for attacking the problem, still awaits a strong, effective reauthorization. The Sierra Club will work to strengthen the nation's pollution statutes, including provisions for the development of recycling markets and a guarantee of citizens' right to know more about toxics in their communities.

How Can You Help?

Write, call, or visit government officials to encourage them to support all action that would help attain global population stabilization.

Urge increased government funding for both national and international family planning programs.

Urge education of school children about the effects of overpopulation on our environment and about family planning.

Limit your family size to no more than two children. Encourage others to do so as well. Consider adoption as a positive alternative.

Educate your friends, associates and the media about overpopulation and how it degrades our environment and quality of life.

Financially support those groups and legislators that work toward population stabilization. Work to help elect supportive legislative candidates.

Get actively involved. Join one or more of the excellent national population stabilization organizations. Start a local population stabilization group if none already exists in your area.

> *"Anyone who stands in the way of measures to bring down the birth rate is automatically working for a rise in the death rate."*
>
> **Paul Ehrlich**

Sierra Club

Statement of Policy

> *"The Sierra Club believes that a rapid end to population growth in this country and around the world is an essential part of any effort to protect the environment, sustain the ability of the earth to support life, and enhance the quality of life for human beings."*

The Sierra Club is working at all levels to achieve global population stabilization. These levels include the Club's National Population Committee, local Chapter Population Committees and individual population activists, supported by the full time staff Population Program Director and other specialized staff.

The Sierra Club has a proven track record of accomplishing its objectives through both educational and legislative advocacy programs when strongly supported by grass roots activists.

The most effective way for you to help save our environment is to join the Sierra Club in its efforts to stabilize the global human population.

More Information

Too many people are putting demands on a world that has little left to give. Working together, we really can make a difference!

Please contact us for more information regarding:

- Membership
- Receiving Our Newsletter
- Speaker's Bureau Services
- Copies of this brochure
- Resource Materials
- Starting Your Own Committee

Call or write:

Nancy Wallace, Director
International Population Program

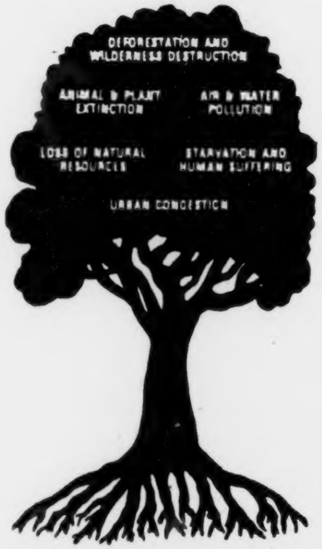
Sierra Club
408 C Street NE
Washington, DC, 20002
(202) 547-1141

Written by:
The Sierra Club, Angeles Chapter
Population Committee
3550 West Sixth Street, Suite 321
Los Angeles, California 90020
(213) 387-4287

Printed on recycled paper

POPULATION STABILIZATION

The Real Solution


DEFORESTATION AND WILDERNESS DESTRUCTION
ANIMAL & PLANT EXTINCTION
AIR & WATER POLLUTION
LOSS OF NATURAL RESOURCES
STARVATION AND HUMAN SUFFERING
URBAN CONGESTION

OVERPOPULATION

The Root of The Problem

The Root Problem

Many of our environmental, social, and economic problems result from a single source: **overpopulation!** As obvious as this "source" should be, many people fail to see the connection.

The birth rate and death rate were once in balance. But the death rate has decreased while lifespan has increased. The result is an exploding world population.

Ponder this: it took tens of thousands of years (until 1830) for the human population to reach one billion.

- By 1987, only 157 years later, the population soared to **five billion!**

- Within the next decade, we will add **another billion** people - about the equivalent of South America and Africa combined.

This huge mass of people is rapidly using up the Earth's limited treasury of resources and dumping its waste into the water, soil and air.

Thousands of plant and animal species become extinct every year due to "loss of habitat." This is the human term for our uncontrolled expansion and selfishness at the expense of all things natural.

> *"All the major problems with which society is confronted, from the nuclear arms race and acid rains to worldwide recession, have major population components."*
>
> **Paul Ehrlich**

The Connection

During the last 50 years, when human populations have increased the most, the **environment suffered its worst damage ever.**

- Global warming due to the greenhouse effect and ozone depletion
- Contamination of our water supplies due to acid rain, sewage, and toxic chemical pollution
- Loss of forests and topsoil

Countries with the most dramatic population increases also experience the highest levels of **human suffering.**

- 15 million infants die each year in the developing world (50% of these deaths could be prevented with expanded family planning services).
- 92% of all babies come into the world in the poorest, least developed countries.
- Increased disease, famine, unemployment and poverty are the result of too many people with too few resources.

Our **quality of life** in the U.S. is beginning to deteriorate because of too many people.

- Increased traffic congestion
- Air and noise pollution
- Loss of open space and wilderness
- Increased pollution caused cancer and health problems
- Overcrowded schools and overburdened social services

> *"Through a chain of cause and effect, virtually every problem now facing humanity can be traced to population."*
>
> **The Cousteau Society**

What the Future Holds

At our present rate of growth,

- **The world's population will double to 10 billion in only the next 40 years!** That's like adding *twenty* more countries the size of the United States in our lifetime.
- Within the next 10 years, the U.S. population will expand equivalent to that of *another California.*
- The U.S. will experience increased immigration pressure from severely overpopulated nations.
- Worldwide scarcity of natural resources will dramatically reduce everyone's standard of living.

If we don't act now to stabilize the human population, then the **death factor** will act for us. Disease, famine and war will eventually stop the inexorable expansion of our masses.

> *"...Rampant population growth underlies the Third World's poverty and poses a major long-term threat to political stability and our planet's resource base."*
>
> **George P. Schultz**

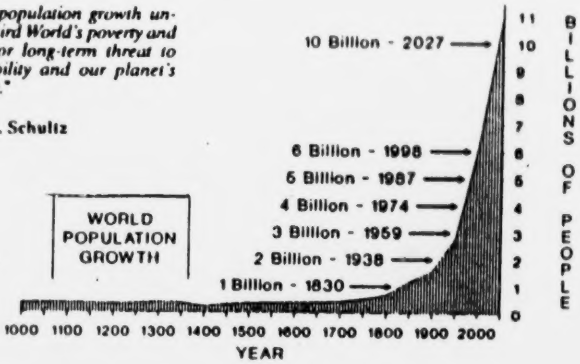
The Challenge

The progressive destruction of our environment and the deterioration of our quality of life can be altered but only with a focused effort to solve the root problem... overpopulation.

The solution to this problem is worldwide population stabilization.

Many countries have already implemented successful voluntary family planning programs that have reduced their population growth rates and reversed environmental decline. But they need and want additional support.

If the industrialized nations of the world doubled their assistance from now until the year 2000, we could stop the world's population growth at 8 billion instead of the estimated 14 billion.



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SECTION M

Pledges, Creeds, and Covenants

PLEDGES, CREEDS AND COVENANTS

Pledges spoken by an individual or group, and repeated many times over, have an impact on our thoughts and on our behavior. Maybe that is why there has been a rash of Environmental Pledges developed during the past few years.

The following pages contain several pledges, creeds and covenants, starting with a Conservation Pledge which dates back to the mid-twentieth century. You might want to discuss some of these pledges with your class, perhaps looking at differences between the old Conservation Pledge and some of those developed around Earth Day 1990. Perhaps the class might want to conduct research to find other pledges and creeds, from the past or stemming from Earth Day '90. You might also want to have your students develop their own pledge and share it with the school or community.

We would like to include other pledges in future updates of *The TEAM Notebook*. Please send them in.

CONSERVATION PLEDGE - Mid-Twentieth Century

I give my Pledge as an American to save and faithfully to defend from waste the natural resources of my country--its soil and waters, its forests, minerals and wildlife.

Revised CONSERVATION PLEDGE - 1991

I give my Pledge as a citizen of the world to save from pollution and degradation, and faithfully to defend from waste and devastation, the natural resources of Planet Earth--its soil, waters, air and atmosphere; its forests, minerals, wildlife and people.

THE FEDERATION PLEDGE

I pledge myself as a responsible
human, to assume my share of the
stewardship of our natural resources.

I will use my share with gratitude,
without greed or waste.

I will respect the rights of others and
abide by the law.

I will support the sound management
of the resources we use,
the restoration of the resources we have despoiled,
and the safe-keeping of
significant resources for posterity.

I will never forget that life and beauty,
wealth and progress, depend on
how wisely we use these gifts . . . the
soil, water, the air, the minerals, the plant life and the wildlife.
This is my pledge.

National Wildlife Federation

PLEDGE TO THE EARTH

We need a clean and healthy Earth
now and forever.

Therefore,
I promise to remember
that I'm not alone on the planet.

I promise to use only what I need
and to take no more than that
and

I promise to start with myself,
to make my home, my community,
my nation
and our Earth
a better place for all living things.

To do this, I pledge.

John Muir Day Education Packet
California Department of Education
April 1990

CREED

I promise to use my eyes to see the beauty of the world,
use my mind to learn about and appreciate the environment,
use my hands to protect and preserve our natural resources
and, through my activities, serve as a role model to others as I make
environmentally sound choices.

"ULTIMATE JOURNEY" Program
Tom Smart, Director
Boys and Girls Clubs of America
771 First Avenue
New York, NY 10017

PLEDGE OF ALLEGIANCE TO MOTHER EARTH

I pledge allegiance to Mother Earth, the home planet of all plant, animal and human life.
I pledge to do my share in making the planet thrive for all life.
I pledge to live lightly on the planet by using energy, water and other resources efficiently and effectively.
LET THE EARTH LIVE!

The preceding is a possible Earth Community School Pledge. The philosophy behind Earth Community Schools is very much related to Thomas Berry's *Dream of the Earth*, published by the Sierra Club and the Library of Philosophy. The same life-centered worldview is also reflected in Chief Seattle's statement and in Wendell Berry's thoughts about healing (Section N), in the Earth Covenant and its registry (Section M) and in others.

Frans C. Verhagen, M. Div., M.I.A., Ph.D.
92-37 63rd Road, 15E
Forest Hills North, NY 11374
(718) 275-3932

THE SHAKERTOWN PLEDGE

Recognizing that the earth and the fullness thereof is a gift from our gracious God, and that we are called to cherish, nurture, and provide loving stewardship for the earth's resources,

And recognizing that life itself is a gift, and a call to responsibility, joy and celebration,

I make the following declarations:

1. I declare myself to be a world citizen.

2. I commit myself to lead an ecologically sound life.

3. I commit myself to lead a life of creative simplicity and to share my personal wealth with the world's poor.

4. I commit myself to join with others in reshaping institutions in order to bring about a more just global society in which each person has full access to the needed resources for their physical, emotional, intellectual, and spiritual growth.

5. I commit myself to occupational accountability, and in so doing I will seek to avoid the creation of products which cause harm to others.

6. I affirm the gift of my body, and commit myself to its proper nourishment and physical well-being.

7. I commit myself to examine continually my relations with others, and to attempt to relate honestly, morally, and lovingly to those around me.

8. I commit myself to personal renewal through prayer, meditation, and study.

9. I commit myself to responsible participation in a community of faith.

For background materials write to:
Shakertown Pledge Group
Simple Living Network
West 44th and York Avenue South
Minneapolis, MN 55410

EARTH DAY 1990 GREEN PLEDGE

BECAUSE... our planet today faces severe environmental crises such as global warming, rainforest devastation, rapidly increasing population and water and air pollution...

BECAUSE... the planet's future depends on the commitment of every nation, as well as every individual...

I PLEDGE TO DO MY SHARE IN SAVING THE PLANET BY LETTING MY CONCERN FOR THE ENVIRONMENT SHAPE HOW I:

ACT: I pledge to do my utmost to recycle, conserve energy, save water, use efficient transportation, and try to adopt a lifestyle as if every day were Earth Day.

PURCHASE: I pledge to do my utmost to buy and use those products least harmful to the environment. Moreover, I will to the maximum extent possible do business with corporations that promote global environmental responsibility.

VOTE: I pledge to vote and support those candidates who demonstrate an abiding concern for the environment.

SUPPORT: I pledge to support the passage of local, state and federal laws and international treaties that protect the environment.

Earth Day 1990 — April 22, 1990

ANCIENT GREEK CITY OFFICIALS' OATH

We vow to bring no disgrace to our earth (the city)
by any act of dishonesty or cowardice.
We vow to fight for the ideals and sacred things.
We vow to revere and obey the earth's (the city's) laws
and to incite respect and reverence.
We vow to leave this earth (the city) no less but better
and more beautiful than it was transmitted to us.

The above was paraphrased from the ancient Greek statement by substituting the word "earth" for the word "city."

PLEDGE ON GLOBAL WARMING

Dear Parents and Students,
We hope you will fill out the following pledge to save a ton of CO_2. (Note: That's at least $100 in energy savings each year!) Your family will also find the list of products, catalogs and energy-efficient ideas useful in fulfilling the pledge. If you work together, and take time to measure your progress, you will achieve your goal. Please begin today!

PLEDGE

To help save the planet from global warming, I,

____

pledge with my family to send **ONE TON** less carbon dioxide (CO_2) gas into the atmosphere this year! We'll do it by taking the energy-saving steps we've checked below—our Family Savings Plan.

1. Car Smarts

Treat our car to a tune-up once a year... SAVE 900 pounds ——

When it's safe, walk or bike two miles a day instead of pushing the gas pedal (and we won't forget to wear our helmets).... SAVE 730 pounds ——

Combine our car errands into one fuel-saving trip... SAVE 500 pounds ——

Keep our car tires inflated... SAVE 250 pounds ——

Trade in the gas-guzzler for a car that gets five more miles per gallon... SAVE 2,000 pounds ——

CO_2 total saved here: ——

2. Electricity Simplicity

Replace a 100-watt incandescent bulb with a 27-watt compact fluorescent bulb... SAVE 160 pounds for each bulb ——

Replace a 75-watt incandescent bulb with an 18-watt compact fluorescent bulb... SAVE 120 pounds for each bulb ——

Lights out when we leave a room... SAVE 120 pounds for each room ——

CO_2 total saved here: ——

3. Getting Into Hot Water

Give our water heater a warm-up jacket of insulation to make it more efficient.......We use:
(electric) SAVE 600 pounds ——
(oil) SAVE 360 pounds ——
(gas) SAVE 260 pounds ——

Cool the hot-water heater down by 10 degrees (but not below 120-degrees Fahrenheit)...
(electric) SAVE 660 pounds ——
(oil) SAVE 400 pounds ——
(gas) SAVE 290 pounds ——

Make our hot water go further with low-flow showerheads...
(electric) SAVE 920 pounds ——
(oil) SAVE 560 pounds ——
(gas) SAVE 400 pounds ——

Chill out our washing machine by doing four out of five laundry loads in cold water...
(electric) SAVE 460 pounds ——
(oil) SAVE 280 pounds ——
(gas) SAVE 200 pounds ——

CO_2 total saved here: ——

4. Home is Where the Heat is

Nudge our thermostat down one degree this winter ...
(electric) SAVE 410 pounds ——
(oil) SAVE 250 pounds ——
(gas) SAVE 180 pounds ——

Give that overworked heating system a 10 degree rest when we're in bed at night...
(electric) SAVE 2,070 pounds ——
(oil) SAVE 1,260 pounds ——
(gas) SAVE 900 pounds ——

Turn our air conditioner's thermostat up a single degree this summer... SAVE 220 pounds ——

Get an annual tune-up
... of our air conditioner.... SAVE 220 pounds ——
...of our furnace (electric) SAVE 1,030 pounds ——
(oil) SAVE 640 pounds ——
(gas) SAVE 450 pounds ——

Plug leaks around windows and doors with weather-stripping—and close the curtains and shades at night.
(electric)...SAVE 1,600 pounds ——
(oil)...SAVE 1,000 pounds ——
(gas)....SAVE 700 pounds ——

CO_2 total saved here: ——

5. Turning Over a New Leaf

Plant a tree on the south or west side of our home to provide cooling shade.... SAVE 150 pounds ——

6. Making Old as Good-as-Gold

Recycle one aluminum can a day.... SAVE 140 pounds ——
Recycle one glass bottle a day..... SAVE 100 pounds ——
Recycle one newspaper a day..... SAVE 50 pounds ——

OUR GRAND TOTAL: The CO_2 we will save this year: ——

"Beat the Heat - The CO_2 Challenge," Children's Earth Fund, New York, New York, 1991

Earth Covenant

A Citizens' Treaty for Common Ecological Security

Preamble

We, the peoples of the Earth, rejoice in the beauty and wonder of the lands, skies, waters, and life in all its diversity. Earth is our home. We share it with all other living beings.

Yet we are rendering the Earth uninhabitable for the human community and for many species of life. Lands are becoming barren, skies fouled, waters poisoned. The cry of people whose land, livelihood and health are being destroyed is heard around the world. The Earth itself is calling us to awaken.

We and all living beings depend upon the Earth and upon one another for our common existence, well-being, and development. Our common future depends upon a reexamination of our most basic assumptions about humankind's relationship to the Earth. We must develop common principles and systems to shape this future in harmony with the Earth.

Governments alone cannot secure the environment. As citizens of the world, we accept responsibility in our personal, occupational and community lives, to protect the integrity of the Earth.

Principles and Commitments

In covenant with each other and on behalf of the whole earth community, we commit ourselves to the following principles and actions:

Relationship with the Earth: All Life is sacred. Each human being is a unique and integral part of the Earth's community of life and has a special responsibility to care for life in all its diverse forms.

Therefore, we will act and live in a way that preserves the natural life processes of the Earth and respects all species and their habitats. We will work to prevent ecological degradation.

Relationship with Each Other: Each human being has the right to a healthful environment and to access to the fruits of the Earth. Each also has a continual duty to work for the realization of these rights for present and future generations.

Therefore—concerned that every person have food, shelter, pure air, potable water, education, employment, and all that is necessary to enjoy the full measure of human rights—we will work for more equitable access to the Earth's resources.

Relationship Between Economic and Ecological Security: Since human life is rooted in the natural processes of the Earth, economic development, to be sustainable, must preserve the life-support systems of the Earth.

Therefore, we will use environmentally protective technologies and promote their availability to people in all parts of the Earth. When doubtful about the consequences of economic goals and technologies on the environment, we will allow an extra margin of protection for nature.

Governance and Ecological Security: The protection and enhancement of life on Earth demand adequate legislative, administrative and judicial systems at appropriate local, national, regional, and international levels. In order to be effective, these systems must be empowering, participatory, and based on openness of information.

Therefore, we will work for the enactment of laws that protect the environment and promote their observance through educational, political and legal action. We shall advance policies of prevention rather than only reacting to ecological harm.

Declaring our partnership with one another and with our Earth, we give our word of honor to be faithful to the above commitments.

____
(Signature)

HOW TO USE THIS COVENANT

Your signature above indicates that you are entering into a covenant with others around the world. Please keep the document for personal reflection and commitment. For discussion and action in group settings, you are invited to duplicate the Covenant. Both individuals and groups are asked to PRINT CLEARLY the name(s) and complete address(es)—including country—of those signing the Covenant, and to send them to the address below, together with this statement:

"The following person(s) have signed the Earth Covenant, committing themselves to the principles and actions therein. They have thereby entered into a covenant with others around the Earth to live ecologically responsible lives. They wish their names to be entered in the Register of Signatories to the Earth Covenant, which will be presented at Earth Day 1990 and the World Conference on the Environment in 1992."

Global Education Associates, 475 Riverside Drive, Suite 456, New York, NY 10115
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SECTION N

Earth Literacy, Environmental Ethics, and a Philosophical Approach to Planet Earth

EARTH LITERACY

During the past decade, there has been a groundswell of interest in a philosophical approach to the environment and Planet Earth which is closely linked with the Earth Ethic of our earliest Americans and other "primitive" people. The terms Earth Literacy, Cosmology, the Green Movement, and Environmental Ethics are cropping up in the literature, in churches and at universities. In most cases there is a spiritual connection, but the movement is neither sectarian nor doctrinaire. Scientists, scholars and theologians, coming from different directions, are focusing on a similar message. Basically, they are saying that our society must master a new level of literacy. We must develop a civilization that makes sense--human sense, planetary sense, cosmic sense. It is this which is considered "Earth Literacy."

The following section of *The TEAM Notebook* contains passages quoted from the foremost thinkers in the Earth Literacy movement as well as from Native Americans, who have known about the essence of Earth Literacy for many centuries without giving it a title.

A NATIVE AMERICAN VIEWPOINT

by Chief Seattle

In 1844 U.S. President Franklin Pierce wanted to buy land in the area which is now the State of Washington. A Native American Chief, after whom the city of Seattle was later named, reluctantly agreed to the sale, in order to avoid war. His warnings against misuse of the land, water and air are even more moving and relevant today than when he uttered them more than 100 years ago.

How can you buy or sell the sky, the warmth of the land? We do not own the freshness of the air or the sparkle on the water.

Every pine needle shining in the sun, every sandy beach, the mist hanging in the dark woods, every clearing, each humming insect, every part of the earth is holy in the memory and experience of my people. We are part of the earth and the earth is part of us. The fragrant flowers are our sisters. The deer, the horse, the great eagle, these are our brothers. The rocky heights, the foaming crests of waves, the meadows' flowers, the body heat of the pony--and human beings--all belong to the same family.

The rivers are our brothers. They quench our thirst, they carry our canoes, and feed our children. You must remember, and teach your children, that the rivers are our brothers, and yours, and give the rivers the kindness you would give any brother.

The white man is a stranger who comes in the night and takes from the land whatever he wants. The earth is not his friend but his enemy, and when he has conquered it, he moves on. He leaves his fathers' graves behind, and he does not care. He kidnaps the earth from his children, and he does not care. He treats his mother, the earth, and his brother, the sky, as things to be bought, plundered, and sold like sheep or bright beads. His appetite will devour the earth and leave behind only a desert.

There is no quiet place in the white man's cities. No place to hear the unfurling of leaves in spring or the rustle of insects' wings. The clatter seems to insult the ears. And what is there to life if you cannot hear the lonely cry of the whippoorwill or the arguments of the frogs around a pond at night? The Indian prefers the soft sound of the wind darting over the face of a pond.

The air is precious, for all things--the beast, the tree, the human being--all share the same breath. The air shares its spirit with all the life it supports. The air that gave our grandfather his first breath also receives his last sigh. And the air must also give our children the spirit of life.

You must treat the animals of this land as your brothers. I have seen a thousand rotting buffaloes on the prairie, left by the white man who shot them from a passing train. I am a savage and do not understand how the smoking iron horse can be more important than the buffalo, which we kill only in order to stay alive. What are human beings without animals? If all the animals should cease to exist, humans would die of a great loneliness of the spirit. Whatever happens to the animals will soon happen also to human beings.

Teach your children what we have taught our children. Whatever happens to the earth happens to the children of the earth. If you spit on the land, you spit on yourselves.

The earth does not belong to us; we belong to the earth. All things are connected, like the blood which unites one family. Mankind did not weave the web of life. We are but one strand within it. Whatever we do to the web, we do to ourselves. All things are bound together.

One thing we know, which the white man may one day discover: our God is the same God and this earth is precious to Him. To harm the earth is to heap contempt on its Creator. Continue to soil your bed, and you will one night suffocate in your own waste.

When the last red man has vanished from this earth, and his memory is only the shadow of a cloud moving across the prairie, these shores and forests will still hold the spirits of my people, for they love this earth as the newborn loves its mother's heartbeat. So if we sell you our land, love it as we have loved it. Care for it as we have cared for it. And with all your strength, with all your mind, with all your heart, preserve it for your children.

With the ways of the white man entering into our lives, perhaps it will not be long before our people become a wandering tribe, aimlessly roving the path of self-deterioration and destruction. But it is for our children to decide and work for. We cannot tell them of the way our people survived, for they would not believe us. We must just hope they, too, can survive what lies before them.

From: *The Zuni's Self-Portrayals*, by the Zuni people

PUEBLO INDIAN PERSPECTIVES

Appreciation for the following quotations is expressed to Ted Sturm and the Pueblo Archives and Research Library, Indian Pueblo Cultural Center, Albuquerque, NM.

We believe we are the first conservationists. We do not destroy or disturb the harmony of nature. To us this is beauty; it is our sense of esthetics. We care for and husband our environment, trying to be all-forbearing like Mother Earth. We feel ourselves trustees of our environment and of our creative values. And this gives us a union with all existence, all the creatures which live in the world: wild animals, little crawling things, and even men. . . .

Except for our ritualistic dances and our way of life, our efforts are related to the care of our environment and what we create. Our pueblo people eat gently, recognizing with inner feelings that the corn or the squash were at one time growing, cared for, each a plant alive, now prepared to become part of us, of our bodies and our minds, quite sacred. We reflect on the plant.

From a talk, "Indian Pottery and Indian Values" given by Popovi Da [Santa Clara Pueblo] as a part of the School of American Research lecture series in December, 1969. Source: *Maria*, by Richard Spivey, 2nd ed. (Northland Press, 1989), pp. xvii, xx-xxi.

The natives took care of the land, and are proud that it has served and saved thousands of people throughout the world from starvation. When Europeans arrives, America was well cared for, so beautiful, so loved--hence, so plentiful. America had remained new since it had not been made old and scarred by human greed--it had not yet been exploited ruthlessly. Instead, America had been lived on by people who regarded life on their part of the earth as a sacred experience of caring for all life.

To the Pueblo Indian the land is not inanimate. It is a living entity, the mother of all life, the Mother Earth. All her children, everything in nature is alive; the living stone, the great breathing mountains, the rushing rivers and streams, the trees and plants, as well as birds and animals--and, of course, human beings.

All of these the Pueblo Indians, and other Indians, view as united in one harmonious whole. Whatever happens to one affects the others, changing the interlocking relationships between the parts.

For many years, due to misunderstanding and a lack of interpretation, Pueblo Indians have been called nature worshippers. In fact, we worship the Creator of the magnificent, incomparable nature around us; it serves as an awesome reminder of the Creator whom we worship. Likewise, we do not believe in mastery over nature, nor in controlling or destroying it. The Pueblo Indian belief is that in destroying nature, man--who is also part of nature--ruptures his own inner self. We are land-based creatures rooted in nature consciously and unconsciously.

Joe S. Sando [Jemez Pueblo], *Nee Hemish* (Clear Light, 1992), p. 17.

The Pueblo world . . . is an altogether hallowed place where "the breath," or life energy, flows through both the animate and inanimate realms in such a manner that event the house, kiva, and community forms breathe of that breath and are essentially alive. The myths, stories, songs, and prayers tell about the Pueblo cosmos as a vital and inclusive containment within which opposite forces are brought together and united by that energy, which flows through everything and everybody. Within that cosmos, interaction and communication between all life forms--including house, kiva, and community forms--is recognized. The myths demonstrate how structure at the physical level is integral with structure at the metaphysical level.

Rina Swentzell [Santa Clara Pueblo], "Pueblo Space, Form, and Mythology," in *Pueblo Style and Regional Architecture*, ed: Nicholas C. Markovich, Wolfgang F. E. Preiser, and Fred G. Sturm (Van Nostrand Reinhold, 1990), p. 23.

We Have Been Told Many Things But We Know This To Be True

The land. The people.
They are in relation to each other.
We are in a family with each other.
The land has worked with us.
And the people have worked with it.
This is true:
Working for the land
and the people--it means life
and its continuity:
Working not just for the people,
But working for the land.

We are not alone in our life;
we cannot expect to be.
The land has given us our life,
and we must give life back to it.

The land has worked for us
to give us life--
breathe and drink and eat from it
gratefully--
and we must work for it
to give it life.
With this relation of family,
it is possible to generate life.
This is the work involved.
Work is creative then.
It is what makes for reliance,
relying upon the relation of land and people.
The people and the land are reliant
upon each other.
This is the kind of self-reliance
that has been--
before the liars, thieves, and killers--
and this is what we must continue
to work for.
By working in this manner,
for the sake of the land and people
to be in vital relation
with each other,
we will have life,
and it will continue.

We have been told many things,
but we know this to be true:
the land and the people.

Simon Ortiz [Acoma Pueblo], 1980, *NAD Literary Journal*, I, 1, p. 35.

QUOTES FROM ALBERT EINSTEIN AND ASTRONAUTS

A human being is part of the whole, called by us "universe," a part limited in time and space. He experiences himself, his thoughts and feeling, as something separated from the rest--a kind of optical delusion of his consciousness. This delusion is a kind of prison for us, restricting us to our personal desires and to affection for a few persons nearest to us. Our task must be to free ourselves from this prison by widening our circle of compassion to embrace all living creatures and the whole of nature in its beauty.

Albert Einstein

Before I flew I was already aware of how small and vulnerable our planet is; but only when I saw it from space, in all its ineffable beauty and fragility, did I realize that humankind's most urgent task is to cherish and preserve it for future generations.

Sigmund Jahn, Germany

From the moon, the Earth is so small and so fragile, and such a precious little spot in that univese, that you can block it out with your thumb. Then you realize that on that spot, that little blue and white thing, is everything that means anything to you--all of history and music and poetry and art and death and birth and love, tears, joy, games, all of it right there on that little spot that you can cover with your thumb. And you realize from that perspective that you've changed forever, that there is something new there, that the relationship is no longer what it was.

Rusty Schweichart, USA

The first day we all pointed to our own countries. The third or fourth day we were pointing to our continents. By the fifth day we were aware of only one Earth.

Prince Sultan bin Salman al-Saud, Saudi Arabia

It isn't important in which sea or lake you observe a slick of pollution, or in the forests of which country a fire breaks out, or on which continent a hurricane arises. You are standing guard over the whole of our Earth.

Yuri Artyukhin, the former USSR

On the return trip home, gazing toward the stars and the planet from which I had come, I suddenly experienced the universe as intelligent, loving, harmonious.

Edgar D. Mitchell, USA

I characterize spaceflight as the metaphor for the technology of the twentieth century, during which science and technology have exploded. The unfortunate thing is that our morals are still rooted in the thirteenth or fourteenth century. Spaceflight, getting outside of Earth and seeing it from a different perspective, having this sort of explosive awareness that some of us had, this abiding concern and passion for the wellbeing of Earth--a more universal point of view--will have a direct impact on philosophy and value systems. . . . It is precisely this shift in viewpoint and what it implies for the capacity of the human being and for our view of the universe that makes it so powerful.

Edgar D. Mitchell, USA

Most of the astronauts' quotes were taken from *THE HOME PLANET*, conceived and edited by Kevin W. Kelley for the Association of Space Explorers, Addison Wesley Publishing Company, 1988.

EARTH LITERACY QUOTATIONS

From *The Earth Literacy Network: Introductory Packet*

Earth Literacy is about letting go of old dreams. It is about going through the chaos to discover the deeper patterns. . . .

Earth Literacy is about concepts needed in order to create a sustainable civilization--a civilization in which human beings live in balance with all other life forms on earth. Students should have a chance to consider these concepts and decide for themselves which, if any, ring true to them. That is the belief of a network of educators who are developing an Earth Literacy curriculum. They believe the future of civilization depends on citizens of all ages mastering this new level of literacy. Einstein said we must master a "new manner of thinking" for humankind to survive.

While this is an important message for all to hear, it is especially important for students whose "manner of thinking" is being shaped now. What judgment can we make when students are trained to unthinkingly take jobs that directly, or indirectly, undermine earth's basic life-support systems? This issue is more than simply the adequacy of education. It is an issue of ethics and morality.

Humankind is preparing for what Peter Russell calls the "cosmic test." The test, he says, is whether or not our species is "psychologically and spiritually fit to live on planet earth." Russell is a British mathematician and physicist who believes our fitness will depend on our ability to create new maps of reality. We must understand our individual life stories in the context of The Story--the story of life, of earth, and of the universe. Russell suggests four goals we must achieve in order to pass the cosmic fitness test.

1. We must change, at a very fundamental level, the way we relate to each other and to the earth.

2. We must learn to work together in harmony rather than in conflict.

3. We must learn to balance centuries of material progress with an equal amount of inner growth.

4. We must connect our inner and outer lives with that unity which we know theoretically (and, in those privileged, magical moments, know experientially) lies at the core of all life.

Russell stresses that the task of showing whether or not humanity is viable rests with each of us. Unlike other species, humans, alone, can anticipate the future. We can make conscious, ethical choices. We can take responsibility for our own story.

The Earth Literacy Network: Introductory Packet
Environmental Ethics Institute
Miami Dade Community College
11011 SW 104th Street
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From *Earth Literacy Link*

Earth Literacy seeks to incorporate the insights of groups which are working to create sustainable lifestyles based on an understanding of Earth's life-support systems in their specific bioregion. Much of Earth Literacy's inspiration has come from scholars and scientists active in the bioregional movement. Many have turned their backs on secure, tenured university positions. They have created new models for education and social change which they believe can help release the untapped resource within human consciousness needed in the turnaround decade. The following quotes will introduce five intellectual pioneers who are contributing the new perceptions needed to re-define literacy and re-orient education. All are quick to admit their own feelings of perplexity concerning the awesome task we face. Yet, on the whole, they are optimistic about new, hopeful patterns emerging from our present state of confusion.

THOMAS BERRY, historian, "theologian/geologian" -- Finally, after generations of taking the Earth apart, science begins a new phase of synthesis . . . of seeing the need that every form of life has for every other form. Students should feel today they are participating in one of the most significant ventures ever to take place in the entire history of the planet. But alienation about the Earth venture has led to confusion about the human venture. Education trivializes, has no unifying paradigm, no larger context for the awesome task. . . . The task: to redefine the human to reinhabit the planet.

MIRIAM T. MACGILLIS, artist -- The supreme crisis of our time is that we do not have a transforming vision of hope for the future. Our institutions are based on assumptions that are not working; we do not have a road map or an ethic to pass on. . . .

DAVID ORR, political scientists -- If today is a typical day on planet Earth, humans will (1) destroy 116.3 square miles of tropical rain forest; (2) turn another 63 square miles into permanent desert; (3) add 15 million tons of carbon to the atmosphere; (4) drive between 4 and 40 species into extinction; (5) erode 71 million tons of topsoil; (6) increase population another 216,000, and (7) spend $2.6 billion on weapons to kill each other. Tonight will be a little warmer, the rain more acidic, the ozone layer a little thinner, and the fabric of life a little more threadbare.

BRIAN SWIMME, physicist -- It is our most educated individuals who lead the way in our sustained assault on the natural world. Our planetary impasse is directly tied to the modern, scientific education process. . . . Universities that continue teaching in the same old way align their powers with this destruction.

FRITJOF CAPRA, physicist -- The world that modern society is designed to fit into doesn't exist. Our economy, our industry, our lifestyles, as we now organize them, are incompatible with the way the real world, the world of nature, works. If the human species is to remain part of the Earth's creative, life-cycling process, we must change. Preparations for the vast and essential changes already have begun.

Excerpt from Nancy Ross' Master's Degree thesis
appearing in *Earth Literacy Link* of the
Environmental Ethics Institute
(A Wolfson Campus Program)
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From GATE - Global Alliance for Transforming Education

We believe that education must spring organically from a profound reverence for life in all its forms. We must rekindle a relationship between the human and the natural world that is nurturing, not exploitive. This is at the very core of our vision for the twenty-first century. The planet Earth is a vastly complex, but fundamentally unitary living system, an oasis of life in the dark void of space. Post-Newtonian science, systems theory, and other recent advances in modern thought have recognized what some ancient spiritual and mythological traditions have taught for centuries: The planet, and all life upon it, form an interdependent whole. Economic, social, and political institutions must engender a deep respect for this interdependence. All must recognize the imperative need for global cooperation and ecological sensitivity, if humankind is to survive on this planet. Our children require a healthy planet on which to live and learn and grow. They need pure air and water and sunlight and fruitful soil and all the other living forms that comprise Earth's ecosystem. A sick planet does not support healthy children.

We call for education that promotes earth literacy to include an awareness of planetary interdependence, the congruence of personal and global well-being, and the individual's role and scope of responsibility. Education needs to be rooted in a global and ecological perspective, in order to cultivate in younger generations an appreciation for the profound interconnectedness of all life. Earth education involves a holistic assessment of our planet and the processes that sustain all life. Central to this study are knowledge of basic support systems for life, energy flows, cycles, interrelationships, and change. Earth education is an integrative field including politics, economics, culture, history, and personal and societal change processes.

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THOMAS BERRY'S FUNCTIONAL COSMOLOGY

compiled by Frans C. Verhagen, M.Div., M.I.A., Ph.D, energy sociologist

Thomas Berry is a Catholic priest (Passionist), a writer, teacher, cultural historian and philosopher. His book, *Dream of the Earth* (1988), has been called one of the most significant and wisest publications of the century. His work has roots in the philosophy and theology of Teilhard de Chardin.

Berry's Three Major Perspectives or MEDIATIONS IN THE HUMAN STORY

> For a long period the divine-human mediation was the dominant context not only of religion, but of the entire span of human activities. Then, for some centuries of industrial classes and nation-states, a primary concern has been interhuman mediation. Now the dominant mediation can be identified as earth-human mediation. The other two mediations will in the future be heavily dependent on our ability to establish a mutually enhancing human-earth presence to each other. The great value of this approach is that we have in the earth an extrahuman referent for all human affairs, a controlling referent that is a universal concern for every human activity. Whether in Asia or America or the South Sea Islands, the earth is the larger context of survival.
>
> Thomas Berry, *The Dream of the Earth*, 1988, p. 88

Berry's ECOLOGICAL AGENDA

Based upon the creative tension between the three mediations, with priority placed upon the earth-human or geocentric mediation, the contours and challenges of his long-term cosmologically informed ecological agenda can be summarized in the following statements:

- Human technologies should function in an integral relation with earth technologies.
- The order of magnitude of the needed changes is large because the changes deal with the most serious transformation of human-earth relations.
- Sustainable progress must be progress of the entire earth community, not only of the human species.
- Technologies have to be integral, i.e., they need to take care of their waste products.
- There is a need for a functional cosmology that will provide the mystique needed for this integral earth-human presence by borrowing creation myths of many cultures and developing new myths and symbols.
- Technologies have a defensive role to play, protecting the earth community members against the planetary and extraterrestrial forces rather than redirecting its 15 billion years evolution.
- These new and healing technologies need to function within a bioregional context, so that regional development takes place within the biological and ecological opportunities and constraints provided by the particular biome or biological/climatological region.

Berry's TWELVE PRINCIPLES: For Understanding the Universe and the Role of the Human in the Universe Process

1. The universe, the solar system, and the planet earth in themselves and in their evolutionary emergence constitute for the human community the primary revelation of that ultimate mystery whence all things emerge into being.

2. The universe is a unity, an interacting and genetically-related community of beings bound together in an inseparable relationship in space and time. The unity of the planet earth is especially clear, each being of the planet is profoundly implicated in the existence and functioning of every other being of the planet.

3. From its beginning the universe is a psychic as well as a physical reality.

4. The three basic laws of the universe at all levels of reality are differentiation, subjectivity, and communion. These laws identify the reality, the values, and the directions in which the universe is proceeding.

5. The universe has a violent as well as a harmonious aspect, but it is consistently creative in the larger arc of its development.

6. The human is that being in whom the universe activates, reflects upon, and celebrates itself in conscious self-awareness.

7. The earth, within the solar system, is a self-emergent, self-propagating, self-nourishing, self-educating, self-governing, self-healing, self-fulfilling community. All particular lifesystems in their being, their sexuality, their nourishment, their education, their government, their healing, their fulfillment, must integrate their functioning within this larger complex of mutually dependent earth systems.

8. The genetic coding process is the process through which the world of the living articulates itself into being and its activities. The great wonder is the creative interaction of the multiple codings among themselves.

9. At the human level, genetic coding mandates a further transgenetic cultural coding by which specifically human qualities find expression. Cultural coding is carried on by educational processes.

10. The emergent process of the universe is irreversible and non-repeatable in the existing order. The movement from non-life to life on the planet earth is a one-time event. So too, the movement from life to the human life form of consciousness. So also the transition from the earlier to the later forms of human culture.

11. The historical sequence of cultural periods can be identified as a tribal-shamanic period, the neolithic village period, the classical civilization period, the scientific-technological period, and the emerging ecological period.

12. The main human task of the immediate future is to assist in activating the intercommunion of all the living and non-living components of the earth community in what can be considered the emerging ecological period of earth development.

Thomas Berry and the New Cosmology, 1987, 23rd Publications, pp. 107-8.

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UNITED NATIONS ENVIRONMENT PROGRAMME

WORLD CHARTER FOR NATURE

I. General Principles

1. Nature shall be respected and its essential processes shall not be impaired.

2. The genetic viability on the earth shall not be compromised; the population levels of all life forms, wild and domesticated, must be at least sufficient for their survival, and to this end necessary habitats shall be safeguarded.

3. All areas of the earth, both land and sea, shall be subject to these principles of conservation; special protection shall be given to unique areas, to representative samples of all the different types of ecosystems and to the habitats of rare or endangered species.

4. Ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they co-exist.

5. Nature shall be secured against degradation caused by warfare or other hostile activities.

II. Functions

6. In the decision-making process it shall be recognized that man's needs can be met only by ensuring the proper functioning of natural systems and by respecting the principles set forth in the present Charter.

7. In the planning and implementation of social and economic development activities, due account shall be taken of the fact that the conservation of nature is an integral part of those activities.

8. In formulating long-term plans for economic development, population growth and the improvement of standards of living, due account shall be taken of the long-term capacity of natural systems to ensure the subsistence and settlement of the populations concerned, recognizing that this capacity may be enhanced through science and technology.

9. The allocation of areas of the earth to various uses shall be planned, and due account shall be taken of the physical constraints, the biological productivity and diversity and the natural beauty of the areas concerned.

10. Natural resources shall not be wasted, but used with a restraint appropriate to the principles set forth in the present Charter, in accordance with the following rules:

(a) Living resources shall not be utilized in excess of their natural capacity for regeneration;

(b) The productivity of soils shall be maintained or enhanced through measures which safeguard their long-term fertility and the process of organic decomposition, and prevent erosion and all other forms of degradation;

(c) Resources, including water, which are not consumed as they are used shall be reused or recycled;

(d) Non-renewable resources which are consumed as they are used shall be exploited with restraint, taking into account their abundance, the rational possibilities of converting them for consumption, and the compatibility of their exploitation with the functioning of natural systems.

11. Activities which might have an impact on nature shall be

controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used; in particular:

(a) Activities which are likely to cause irreversible damage to nature shall be avoided;

(b) Activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed.

(c) Activities which may disturb nature shall be preceded by assessment of their consequences, and environmental impact studies of development projects shall be conducted sufficiently in advance, and if they are to be undertaken, such activities shall be planned and carried out so as to minimize potential adverse effects;

(d) Agriculture, grazing, forestry and fisheries practices shall be adapted to the natural characteristics and constraints of given areas;

(e) Areas degraded by human activities shall be rehabilitated for purposes in accord with their natural potential and compatible with the well-being of affected populations.

12. Discharge of pollutants into natural systems shall be avoided and:

(a) Where this is not feasible, such pollutants shall be treated at the source, using the best practicable means available;

(b) Special precautions shall be taken to prevent discharge of radioactive or toxic wastes.

13. Measures intended to prevent, control or limit natural disasters, infestations and diseases shall be specifically directed at the causes of these scourges and shall avoid adverse side-effects on nature.

III. Implementation

14. The principles set forth in the present Charter shall be reflected in the law and practice of each State, as well as at the international level.

15. Knowledge of nature shall be broadly disseminated by all possible means, particularly by ecological education as an integral part of general education.

16. All planning shall include, among its essential elements, the formulation of strategies for the conservation of nature, the establishment of inventories of ecosystems and assessments of the effects on nature of proposed policies and activities; all of these elements shall be disclosed to the public by appropriate means in time to permit effective consultation and participation.

17. Funds, programmes and administrative structures necessary to achieve the objective of the conservation of nature shall be provided.

18. Constant efforts shall be made to increase knowledge of nature by scientific research and to disseminate such knowledge unimpeded by restrictions of any kind.

19. The status of natural processes, ecosystems and species shall be closely monitored to enable early detection of degradation or threat, ensure timely intervention and facilitate the evaluation of conservation policies and methods.

20. Military activities damaging to nature shall be avoided.

21. States and, to the extent they are able, other public authorities, international organizations, individuals, groups and corporations shall:

(a) Co-operate in the task of conserving nature through common activities and other relevant actions, including information exchange and consultations;

(b) Establish standards for products and manufacturing processes that may have adverse effects on nature, as well as agreed methodologies for assessing these effects;

(c) Implement the applicable international legal provisions for the conservation of nature and the protection of the environment;

(d) Ensure that activities within their jurisdictions or control do not cause damage to the natural systems located within other States or in the areas beyond the limits of national jurisdiction;

(e) Safeguard and conserve nature in areas beyond national jurisdiction;

22. Taking fully into account the sovereignty of States over their natural resources, each State shall give effect to the provisions of the present Charter through its competent organs and in co-operation with other States.

23. All persons, in accordance with their national legislation, shall have the opportunity to participate, individually or with others, in the formulation of decisions of direct concern to their environment, and shall have access to means of redress when their environment has suffered damage or degradation.

24. Each person has a duty to act in accordance with the provisions of the present Charter; acting individually, in association with others or through participation in the political process, each person shall strive to ensure that the objectives and requirements of the present Charter are met.

The General Assembly,

Reaffirming the fundamental purposes of the United Nations, in particular the maintenance of international peace and security, the development of friendly relations among nations and the achievement of international co-operation in solving international problems of an economic, social, cultural, technical, intellectual or humanitarian character,

Aware that:

(a) Mankind is a part of nature and life depends on the uninterrupted functioning of natural systems which ensure the supply of energy and nutrients,

(b) Civilization is rooted in nature, which has shaped human culture and influenced all artistic and scientific achievement, and living in harmony with nature gives man the best opportunities for the development of his creativity, and for rest and recreation.

Convinced that:

(a) Every form of life is unique, warranting respect regardless of its worth to man, and, to accord other organisms such recognition, man must be guided by a moral code of action,

(b) Man can alter nature and exhaust natural resources by his action or its consequences and, therefore, must fully recognize the urgency of maintaining the stability and quality of nature and of conserving natural resources,

Persuaded that:

(a) Lasting benefits from nature depend upon the maintenance of essential ecological processes and life support systems, and upon the diversity of life forms, which are jeopardized through excessive exploitation and habitat destruction by man,

(b) The degradation of natural systems owing to excessive consumption and misuse of natural resources, as well as to failure to establish an appropriate economic order among peoples and among States, leads to the breakdown of the economic, social and political framework of civilization.

(c) Competition for scarce resources creates conflicts, whereas the conservation of nature and natural resources contributes to justice and the maintenance of peace and cannot be achieved until mankind learns to live in peace and to forsake war and armaments,

Reaffirming that man must acquire the knowledge to maintain and enhance his ability to use natural resources in a manner which ensure the preservation of the species and ecosystems for the benefit of present and future generations,

Firmly convinced of the need for appropriate measures, at the national and international, individual and collective, and private and public levels, to protect nature and promote international co-operation in this field,

Adopts, to these ends, the present World Charter for Nature, which proclaims these principles of conservation by which all human conduct affecting nature is to be guided and judged.

UNITED NATIONS ENVIRONMENT PROGRAMME
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SECTION O

Looking to the Future: Trends and Projections

NEW DIRECTIONS FOR ENVIRONMENTAL EDUCATION

Changes in the nature and scope of environmental education during the past few decades have been gradual and relatively minor until quite recently. Primarily, our focus had been on the bio-physical aspects of the environment and, since Earth 1970, on the part humans play interactively with the natural world.

The emergence of a global perspective on the environment just prior to Earth Day 1990 saw a dramatic shift toward broader parameters and a previously unrecognized, or unacknowledged, fundamental inter-relationship between environmental and broad social problems. Thus, it is becoming apparent that such issues as poverty, hunger, population, peace and war, human rights, democracy and degradation of the biological and physical components of the natural environment must be perceived as a holistic totality.

The Treaty on Environmental Education for Sustainable Societies and Global Responsibilities developed by the Non-Governmental Organizations (NGO) Forum in Rio de Janeiro in June 1992, refers to "advancing collective understanding of the systemic nature of the crises that threaten the world's future. The root causes of such problems as increasing poverty, environmental deterioration and communal violence can be found in the dominant socio-economic system. This system is based on over-production and over-consumption for some and under-consumption and inadequate conditions to produce for the great majority."

To accompany this new thinking about our global problems, a new word has been added to the environment/environmental education lexicon: sustainable. It occurs in partnership with many other words: sustainable communities
sustainable societies
sustainable future
sustainable environment
sustainable use
sustainable growth
sustainable development
(most frequently)

No matter which of these terms is used, the message is basically the same: We must all learn to satisfy our needs without making such demands on the natural resources of the world that there will be nothing left for future generations.

The implications of this thought are staggering. This is the challenge ahead of us as we approach the 21st Century. This forms the basis for the new directions in environmental education for the 1990's.

ENVIRONMENTAL EDUCATION

For Sustainable Societies and Global Responsibility

(This treaty, as in education, is a dynamic process and should therefore promote reflection, debate and amendments.)

We signatories, people from all parts of the globe, are devoted to protecting life on earth and recognize the central role of education in shaping values and social action. We commit ourselves to a process of educational transformation aimed at involving ourselves, our communities and nations in creating equitable and sustainable societies. In so doing we seek to bring new hope to our small, troubled, but still beautiful planet.

1 Introduction

We consider that environmental education for equitable sustainability is a continuous learning process based on respect for all life. Such education affirms values and actions which contribute to human and social transformation and ecological preservation. It fosters ecologically sound and equitable societies that live together in interdependence and diversity. This requires individual and collective responsibility at the local, national and planetary level.

We consider that preparing ourselves for the required changes depends on advancing collective understanding of the systemic nature of the crises that threaten the world's future. The root causes of such problems as increasing poverty, environmental deterioration and communal violence can be found in the dominant socio-economic system. This system is based on over-production and over-consumption for some and under-consumption and inadequate conditions to produce for the great majority.

We consider that inherent in the crisis are an erosion of basic values, and the alienation and non-participation of almost all individuals in the building of their own future. It is of fundamental importance that the world's communities design and work out their own alternatives to existing policies. Such alternatives include the abolition of those programmes of development, adjustment and economic reform which maintain the existing growth model with its devasting effects on the environment and its diverse species, including the human one.

We consider that environmental education should urgently bring about change in the quality of life and a greater consciousness of personal conduct, as well as harmony among human beings and between them and other forms of life.

2 Some Principles of Environmental Education for Equitable and Sustainable Societies

1. Education is the right of all; we are all learners and educators.
2. Environmental education, whether formal, non-formal or informal, should be grounded in critical and innovative thinking in any place or time, promoting the transformation and construction of society.
3. Environmental education is both individual and collective. It aims to develop local and global citizenship with respect for self-determination and the sovereignty of nations.
4. Environmental education is not neutral but is value-based. It is an act for social transformation.
5. Environmental education must involve a holistic approach and thus an inter-disciplinary focus in the relation between human beings, nature and the universe.
6. Environmental education must stimulate solidarity, equality, and respect for human rights involving democratic strategies and an open climate of cultural interchange.
7. Environmental education should treat critical global issues, their causes and inter–relationships in a systemic approach and within their social and historical contexts. Fundamental issues in relation to de-

velopment and the environment, such as population, health, peace, human rights, democracy, hunger, degradation of flora and fauna, should be perceived in this manner.

8. Environmental education must facilitate equal partnerships in the processes of decision-making at all levels and stages.
9. Environmental education must recover, recognize, respect, reflect and utilize indigenous history and local cultures, as well as promote cultural, linguistic and ecological diversity. This implies acknowledging the historical perspective of native peoples as a way to change ethnocentric approaches, as well as the encouragement of bilingual education.
10. Environmental education should empower all peoples and promote opportunities for grassroots democratic change and participation. This means that communities must regain control of their own destiny.
11. Environmental education values all different form of knowledge. Knowledge is diverse, cumulative and socially produced and should not be patented or monopolized.
12. Environmental education must be designed to enable people to manage conflicts in just and humane ways.
13. Environmental education must stimulate dialogue and cooperation among individuals and institutions in order to create new lifestyles which are based on meeting everyone's basic needs regardless of ethnic, gender, age, religious, class, physical or mental differences.
14. Environmental education requires a democratization of the mass media and its commitment to the interests of all sectors of society. Communication is an inalienable right and the mass media must be transformed into one of the main channels of education, not only by disseminating information on an egalitarian basis, but also through the exchange of means, values and experiences.
15. Environmental education must integrate knowledge, skills, values, attitudes and actions. It should convert every opportunity into an educational experience for sustainable societies.
16. Education must help develop an ethical awareness of all forms of life with which humans share this planet, respect all life cycles and impose limits on humans' exploitation of other forms of life.

3 Plan of Action

The organizations that sign this Treaty will implement policies to:

1. Turn the declarations of this Treaty and other Treaties produced by the Conference of Citizens' Groups during the RIO 92 process, into documents for use in formal education systems and in education programmes of social movements and social organizations.
2. Work on environmental education for sustainable societies together with groups that draft other Treaties approved during RIO 92.
3. Make comparative studies of the treaties of citizens' groups and those produced by the United Nations Conference on Environment and Development (UNCED) and use the conclusions in educational activities.
4. Work on the principles of this Treaty from the perspective of local situations, necessarily relating them to the state of the planet, creating a consciousness for transformation.
5. Promote knowledge, policies, methods, and practices in all areas of formal, informal and non-formal environmental education and for all age groups.
6. Promote and support training for environmental conservation, preservation and management, as part of the exercise of local and planetary citizenship.
7. Encourage individuals and groups to take positions, and institutions to make policies, that constantly review the coherence between what is said and what is done, as well as the values of our cultures, traditions and history.
8. Circulate information about people's wisdom and memory, and support and inform about appropriate initiatives and technologies in relation to the use of natural resources.
9. Promote gender co-responsibility in relation to production, reproduction and the maintenance of life.
10. Stimulate and support the creation and strengthening of ecologically responsible producers' and consumers' associations, and commercial networks, that provide ecologically sound alternatives.
11. Sensitize populations so that they establish Peoples' Councils for Environmental Management and Ecological Action to research, discuss, inform and decide on environmental problems and policies.
12. Create educational, judicial, organizational and political conditions to guarantee that governments allocate a significant part of their budgets to education and the environment.
13. Promote partnership and cooperation among NGOs, social movements, and the UN agencies (UNESCO, UNEP, FAO, and others) at national, regional and international levels to jointly set priorities for action in education, environment and development.

14. Promote the creation and strengthening of national, regional and international networks for joint action between organizations of the South, North, East and West with a planetary perspective (e.g.foreign debt, human rights, peace, global warming, population, contaminated products).

15. Ensure that the media becomes an educational instrument for the preservation and conservation of natural resources presenting a plurality of views and reliable and contextualized information; and stimulate the broadcasting of programmes generated by local communities.

16. Promote an understanding of the causes of consumerist behavior and act to change practices and the systems that maintain them.

17. Search for self-managed, economically and ecologically appropriate alternatives of production which contribute to an improvement in the quality of life.

18. Act to eradicate sexism, racism and any other prejudices, as well as contribute to the promotion of cultural diversity, territorial rights and self-determination.

19. Mobilize formal and non-formal institutions of higher education in support of teaching, research and extension towards the community in environmental education, and the creation, in each University, of interdisciplinary centres for the environment.

20. Strengthen social organizations and movements in order to enhance the exercise of citizenship and an improvement in the quality of life and the environment.

21. Assure that ecological organizations popularize their activities and that communities incorporate ecological issues in everyday life.

22. Establish criteria for the approval of education projects for sustainable societies, discussing social priorities with funding agencies.

4 *Coordination, Monitoring and Evaluation Systems*

All signatories of this Treaty agree to:

1. Distribute and promote the Treaty on Environmental Education for Sustainable Societies and Global Responsibility in all countries, through joint campaigns by NGOs, social movements and others.

2. Stimulate and create organizations and groups of NGOs and social movements to initiate, implement, follow, and evaluate the elements of this Treaty.

3. Produce materials to publicise this Treaty and its unfolding into educational action, in the form of texts, educational materials, courses, research, cultural events, media programmes, fairs of popular creativity, electronic mail, and other means.

4. Form an international coordination group to give continuity to the proposals in this Treaty.

5. Stimulate, create and develop networks of environmental educators.

6. Ensure the 1st Planetary Meeting of Environmental Education for Sustainable Societies is held within three years.

7. Coordinate action to support social movements which are working for improving the quality of life, extending effective international solidarity.

8. Foster links between NGOs and social movements to review their strategies and programmes on environment and education.

5 *Groups to be Involved*

This Treaty is aimed at:

1. Organizations of social movements — ecologist, women's, youth, ethnic, farmers', union, neighbourhood, artistic groups, and others.
2. NGOs committed to grassroots social movements.
3. Professional educators interested in establishing programmes related to environmental issues in formal education systems and other educational activities.
4. Those responsible for the mass media who are ready to accept the challenge of openness and democracy, thus initiating a new concept of mass communication.
5. Scientists and scientific institutions that take ethical positions and are sympathetic to the work of social movements and organizations.
6. Religious groups interested in working with social organizations and movements.
7. Local and national governments able to act in tune and in partnership with the aims of this Treaty.
8. Business people committed to working within a rationale of recovery, conservation and improvement of the environment and the quality of life.
9. Alternative communities that experience new lifestyles in harmony with the principles and aims of this Treaty.

6 Resources

All signatories of this Treaty are committed to:

1. Allocating a significant part of their resources to the development of educational programmes related to an improvement of the environment and quality of life.
2. Demanding that governments allocate a significant percentage of Gross National Product to supporting programmes of environmental education in all sectors of public administration, with the direct participation of NGOs and social movements.
3. Proposing economic policies that stimulate business to develop and apply appropriate technology and create environmental education programmes for the community, and as part of personnel training.
4. Encouraging funding agencies to prioritize and allocate significant resources to environmental education and ensure its presence in projects they approve wherever possible.
5. Contributing to the formation of a cooperative and decentralized global banking system for NGOs and social movements that will use part of its resources for educational programmes and at the same time be an exemplary exercise in using financial resources.

Background to the Treaty

The aim of the Treaty on Environmental Education for Sustainable Societies and Global Responsibility is to elicit the commitment of all active and interested people to a series of principles.

The process that led to the drafting of this Treaty can be described in the following stages:

I.

The elaboration of a Charter on Environmental Education in four languages, with the subsequent collection and systematization of comments improving and modifying it from five continents between August 1991 and March 1992.

II.

In March 1992, the then Charter on Environmental Education was introduced at the 4th Preparatory Committee (PrepCom) in New York where it was redrafted by the NGO Education Working Group, which expanded it not only in terms of its concepts but also in its format and the composition of the group responsible for its development. It thus took on the characteristics of a Treaty, an international agreement to be signed by individuals and organizations concerned with education.

Guidelines were given by the NGO Coordination Group for UNCED for the drafting of documents that contained the following sections: Introduction, Principles, Plan of Action, Coordination and Monitoring Mechanisms, Groups to be Involved, and Resources. The first two sections were discussed in New York.

III.

In April/May 1992 the texts drafted in New York were once again circulated internationally, thereby completing the drafts of the other four sections.

Finally this text was translated into four languages and printed for discussion in the Journey on Environmental Education in the context of RIO/92.

IV.

During the Journey in June 1992 a last stage in the drafting of the text led to a final version after 14 hours of discussion in plenary sessions and workshops, and many hours of incorporating and editing the additional proposals into the text. This version was then translated into the four languages adopted by the International NGO Forum.

The official launch of the Treaty took place on 7 June 1992, during an Eco-Carnival Parade with the participation of 2000 children from the Samba School, Flowers for Tomorrow, Brazil.

On 9 June the Treaty was presented to the plenary session of the International NGO Forum, after which the group met to discuss specific points which still required consensus. Some additional comments were made in the plenary and are included in an annex, reflecting the start of a new stage of implementing the Treaty which began in Rio. The process then also started to collect the signatures of those supporting and committed to the implementation of the Treaty.

V.

On 12 June the Treaty was accepted in a plenary meeting by the International Forum of NGOs and Social Movements.

An international commission was set up to implement the treaty.

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FRIENDSHIP FOUNDATION

THE PEOPLE'S EARTH DECLARATION
A Proactive Agenda for the Future

We, the participants in the International NGO Forum of Global Forum '92, have met in Rio de Janeiro as citizens of planet earth to share our concerns, our dreams, and our plans for creating a new future for our world. We emerge from these deliberations with a profound sense that in the richness of our diversity we share a common vision of a human society grounded in the values of simplicity, love, peace, and reverence for life. We now go forth in solidarity to mobilize the moral and human resources of the civil societies of all nations in a unified social movement committed to the realization of this vision.

The urgency of our commitment is heightened by the choice of the world's political leaders in the official deliberations of the Earth Summit to neglect many of the most fundamental causes of the accelerating ecological and social devastation of our planet. While they engage in the fine tuning of an economic system that serves the short-term interests of the few at the expense of the many, the leadership for more fundamental change has fallen by default to the organizations and movements of civil society. We accept this challenge.

In so doing we wish to remind the world's political and corporate leaders that the authority of the state and the powers of the private corporation are grants extended to these institutions by the sovereign people, by civil society, to serve the collective human interest. It is the people's right to demand that governments and corporations remain accountable to the public will and interest. Yet through a process of global economic integration pressed on the world's people by the G7 governments, the Bretton Woods institutions—the World Bank, International Monetary Fund (IMF), and General Agreement on Trade and Tariffs (GATT)—and transnational corporations, the sovereign right and ability of the world's people to protect their economic, social, cultural, and environmental interests against the growing power of transnational capital is being seriously and rapidly eroded.

This erosion has been only one of the many damaging consequences of a development model grounded in the pursuit of economic growth and consumption to the exclusion of the human and natural interest. Others include the increasing spiritual impoverishment of human society, the economic impoverishment of some 1.2 billion people, the rapidly widening gap between rich and poor, economic racism, institutionalized exploitation of women, the displacement of millions of peoples from their lands and communities, marginalization of the handicapped, and the progressive destruction of the ecological systems that sustain us all.

The path of deepening international debt, structural adjustment, market deregulation, free trade, and the monopolization of intellectual property rights that currently dominates policy thought and action is a path to collective self-destruction, not to sustainable development. We will use our votes, our moral authority, and our purchasing power to remove from positions of authority those who insist on advancing these socially and ecologically destructive policies to serve short-term elite interests.

The Bretton Woods institutions have served as the major instruments by which these destructive policies have been imposed on the world. They constitute a formidable barrier to just and sustainable development. We will work for their transformation or replacement by more suitable institutions. Until they have become fully transparent, publicly accountable, and supportive of the human interest, they must not be allowed to capture control of the sustainability agenda.

The world's military forces survive primarily as instruments to protect elite interests and suppress the civil unrest that results from economic injustice. They further place an unconscionable burden on earth's scarce ecological resources. We will work for their elimination and the transfer of their resources to more beneficial purposes. As a first step we will work to end international arms trade and assistance.

These are realities the official UNCED process has avoided. They have been among our central concerns.

We have not, however, limited our attention to critique. We have also sought to define our vision for an alternative future and our agenda for its accomplishment. We are diverse in our experience and languages. We seek alternatives for which there are no clear models. The existing dominant development model and its supporting institutions emerged over a period of some 500 years. The two weeks we have spent in deliberations in Rio are only a beginning toward crafting an alternative. We have achieved a broadly shared consensus that the following principles will guide our continuing collective effort.

- The fundamental purpose of economic organization is to meet the community's basic needs, such as for food, shel-

This declaration was prepared in Rio de Janeiro, Brazil in June 1992 to document the underlying consensus that emerged from the deliberations of the International NGO Forum during the UNCED Earth Summit. For further information contact Green Forum Philippines, 3rd Floor, Liberty Building, 835 Pasay Road, Makati 1200, Metro Manila, Philippines, phone (63-2) 851-110, fax (63-2) 818-3207; or Canadian Council for International Cooperation, 1 Nicholas Street, Suite 300, Ottawa, Ontario K1N 7B7, Canada, phone (1-632) 236-4547, fax (1-613) 236-2188.

ter, clothing, education, health, and the enjoyment of culture. This purpose must take priority over all other forms of consumption, particularly wasteful and destructive forms of consumption such as consumerism and military spending—both of which must be eliminated without further delay. Other immediate priorities include energy conservation, shifting reliance on solar energy sources, and converting agriculture to sustainable practices that minimize dependence on non-renewable, and ecologically harmful inputs.

- Beyond meeting basic physical needs, the quality of human life depends more on the development of social relationships, creativity, cultural and artistic expression, spirituality, and opportunity to be a productive member of the community than on the ever increasing consumption of material goods. Everyone, including the handicapped, must have a full opportunity to participate in all these forms of development.

- Organizing economic life around decentralized relatively self-reliant local economies that control and manage their own productive resources, provide all people an equitable share in the control and benefits of productive resources, and have the right to safeguard their own environmental and social standards is essential to sustainability. It strengthens attachment to place, encourages environmental stewardship, enhances local food security, and accommodates to distinctive cultural identities. Trade between such local economies, as between nations, should be just and balanced. Where the rights and interests of the corporation conflict with the rights and interests of the community, the latter must prevail.

- All elements of society, irrespective of gender, class, or ethnic identity, have a right and obligation to participate fully in the life and decisions of the community. The presently poor and disenfranchised, in particular, must become full participants. Women's roles, needs, values and wisdom are especially central to decision-making on the fate of the Earth. There is an urgent need to involve women at all levels of policy making, planning and implementation on an equal basis with men. Gender balance is essential to sustainable development. Indigenous people also bring vital leadership to the task of conserving the earth and its creatures and in creating a new life-affirming global reality. Indigenous wisdom constitutes one of human society's important and irreplaceable resources. The rights and contributions of indigenous people must be recognized.

- While overall population growth is a danger to the health of the planet, growth in the numbers of the world's over consumers is a more immediate threat than population growth among the poor. Assuring all people the means to meet their basic needs is an essential precondition to stabilizing population. Reproductive freedom and access to comprehensive reproductive health care and family planning are basic human rights.

- Knowledge is humanity's one infinitely expandable resource. Beneficial knowledge in whatever form, including technology, is a part of the collective human heritage and should be freely shared with all who might benefit from it.

- Debt bondage, whether of an individual or a country, is immoral and should be held unenforceable in international and civil law.

- Transparency must be the fundamental premise underlying decision making in all public institutions, including at international levels.

Implementation of these principles toward transformational change will require a massive commitment to education. New understanding, values, and skills are needed at all levels and across all elements of society. We will educate ourselves, our communities, and our nations to this end.

We acknowledge our debt to indigenous wisdom and values. These have greatly enriched our deliberations and will be sources of continuing learning. We will honor this heritage and work to protect the rights of indigenous people.

Our thinking has also been enriched by the teachings of the many religious traditions represented among us. We recognize the central place of spiritual values and spiritual development in the society we seek to create. We commit ourselves to live by the values of simplicity, love, peace, and reverence for life shared by all religious traditions.

Our efforts in Rio have produced a number of people's treaties to define more specific commitments to one another for action at local, national, and international levels. These treaties are in varying stages of development. All are documents in process. We will further refine them through countless dialogues and negotiations throughout the world as ever larger numbers of people join in our growing movement.

We invite the leaders of business and government to join us in this act of global citizenship. They must, however, know that we no longer wait for them to lead us in dealing with a global reality they have so far chosen to ignore. The time is too short and the stakes too high.

We, the people of the world, will mobilize the forces of transnational civil society behind a widely shared agenda that bonds our many social movements in pursuit of just, sustainable, and participatory human societies. In so doing we are forging our own instruments and processes for redefining the nature and meaning of human progress and for transforming those institutions that no longer respond to our needs. We welcome to our cause all people who share our commitment to peaceful and democratic change in the interest of our living planet and the human societies it sustains.

Rio de Janeiro, Brazil
June 12, 1992

PROMOTING ENVIRONMENTAL AWARENESS

(Section IV, Chapter 36 of Agenda 21)

Education is critical for promoting sustainable development and effective public participation in decision-making. Proposals in Agenda 21 focus on reorienting education towards sustainable development, increasing public awareness and promoting training.

Countries, schools and/or the appropriate international and national institutions and organizations should:

- Strive to ensure universal access to basic education.
- Achieve primary education for at least 80 per cent of girls and 80 per cent of boys of primary school-age through formal schooling or non-formal education.
- Reduce adult illiteracy rates to at least half of their 1990 levels, with particular focus on women.
- Endorse the recommendations of the World Conference on Education for All: Meeting Basic Learning Needs, held in Thailand in March 1990.
- Achieve environmental and development education from primary school-age through adulthood.
- Integrate environment and development concepts, including demography, in all education programmes, with a particular emphasis on discussing environmental problems in a local context.
- Create a national board, representative of all environmental and developmental interests, to give advice on education.
- Involve schoolchildren in local and regional studies on environmental health, including safe drinking water, sanitation, food and ecosystems.
- Encourage cross-disciplinary university courses in fields which have an impact on the environment.
- Promote adult education programmes based on local problems related to environment and development.

There is still a considerable lack of awareness regarding the inter-related nature of human activities and the environment. A global education effort is proposed to strengthen attitudes, values and actions that are environmentally sound and that support sustainable development.

Training is one of the most important tools to facilitate the transition to a more sustainable world. It would have a job-specific focus, aimed at filling gaps in knowledge and skills that would help individuals find employment and be involved in environmental work.

Greater use should be made of quality-of-life indicators and data on links between ecosystems and human health, and of economic measures, including incentives. Long-term policies should be informed by assessments of risks dependent on available technologies.

SECTION P

Sierraecology

SIERRAECOLOGY

NEWSLETTER OF THE SIERRA CLUB'S NATIONAL ENVIRONMENTAL EDUCATION COMMITTEE

Vol. 10 No. 1 Jan. 1992

SIERRA CLUB 1992 SUMMER ENVIRONMENTAL WORKSHOP

7th Annual Program for Educators
Sunday July 5–Sunday July 12, 1992

Clair Tappaan Lodge in the Sierra at Norden, California

- ◆ Explore diverse habitats
- ◆ Meet experts on the environment
- ◆ Special electives to enjoy the environment
- ◆ Focus on current issues affecting the global environment

COST

Adults $275 Teens $220
Children (7–12) $190

Cost includes room, board, tuition, insurance, trips, snacks, and special materials and resources.

This workshop is designed for environmental education professionals, teachers, and their families.

1992 SUMMER ENVIRONMENTAL WORKSHOP
PRE-REGISTRATION FORM

Name ____________________
Address ____________________
City ____________________
State ____________ Zip ________
Choice of workshop ____________________
Do you wish teaching credits? ____________________

DEPOSIT (non-refundable) $50
$10 Late fee after May 1.

To register or receive additional information, send to:

SIERRA CLUB EDUCATORS' WORKSHOP

c/o VOLUNTEER DEVELOPMENT OFFICE
Sierra Club, 730 Polk St., San Francisco, CA 94109
or call:
Michele Perrault, Workshop Director, 510-283-6683

NATIONAL CELEBRATIONS

The Sierra Club is having a birthday party--and you're invited! John Muir and friends formed the Sierra Club in San Francisco, May 28, 1892. Let's all celebrate 100 years of environmental action.

CYCLE TO CELEBRATE

From Sept. 20th to October 17th, 1991, the Sierra Club National Bike Outing is retracing John Muir's "One Thousand Mile Walk to the Gulf". 1,000 miles from Louisville, KY to Florida's Cedar Key...a bike trip to beat all bike trips. For more information call Marjorie Richman 301-320-5509 or Alita Paine 415-923-5597.

HIKE TO CELEBRATE

Five million steps. That's what it takes. From Springer Mountain to Katahdin Mountain, Maine. A birthday party on America's unrivalled ribbon of wilderness...the Appalachian Trail. To find out more about this March 15 to Sept. 5 expedition, and how you can participate, call: Harvard Ayers 704-262-6381 or Alita Paine 415-923-5597.

EARTHDAY/BIRTHDAY BASH

Earthday April 25th
John Muir's Birthday April 21st
Combine them this year.

FREE - John Muir Day/Education Packet--Packet includes suggestions for classroom and schoolwide activities for Grades 1-12, biographical timeline of John Muir's life, student bibliography, films and videos. A selection of activities and resources designed to assist schools in the celebration of John Muir's significant contributions toward the conservation and appreciation of the earth's natural beauty and resources. Write: Pat Suiter, P. O. Box 557953, Miami, FL 3255. Enclose a SASE. Use a $.29 stamp.

Pat Suiter, Editor

EDUCATION NETWORK:

Timely Political Letters Get Right At The Heart Of The Issues

Wading River, N.Y.

7 Penn Plaza
Suite 600
New York, N.Y. 10001

Dear Senator D'Amato,

My name is Lauren Maugeri and I am opposed to Senate bill 341. This bill wants us to go to Alaska to drill for oil. Going to Alaska to get oil might be easier than going to a different country to get oil, but it is going to hurt the wildlife in the Arctic Wildlife Refuge. For some animals that is their only home. The government's own estimates of the oil that is supposed to be there is only 3 billion barrels. In this country we use 18 million barrels of oil a day. That means that the oil we find there will only last this country about 180 days. What is this worth? I, as a citizen of New York, am asking you to please vote against the Johnston / Wallop Senate bill 341. I am educating people in my community about this bill and making people more aware of it.

I am concerned that your voting record on environment has not been very good. You have not been a strong supporter of pro-environment issues over the last several years. I want this world to be clean and filled with beautiful wildlife and amazing sights of nature for my children. It is up to all of us to keep this world beautiful. Please show me that you care about our environment by voting against S. 341!

Sincerely,

Lauren Maugeri

Shoreham, N.Y.

Daniel P. Moynihan
733 Third Avenue
New York, N.Y. 10017

Dear Senator Moynihan,

My name is Salmaan Shikari. I am a 13 year old seventh grader and attend the Shoreham-Wading River Middle School.

I have been doing some research on the environment and decided to see what my senators voted for. I have learned that you voted for every environmental issue there was in 1990 except for the one on smog control. This gives you a 92% average on the environment! Keep up the good work Mr. Moynihan. I have already convinced my parents to vote for you in the next election.

However I am still concerned about how you will vote on the Motor Vehicle Fuel Efficiency Act (S.279). This act will standardize the mileage on all cars to at least 40 miles per gallon by 2001. Besides being the single most important step Congress can take to stop global warming, it will also save 3.2 million barrels of oil a day by the year 2010. That is 10 times more oil a day than what is estimated could be produced in a day of digging in the Arctic. This drilling would take place on large amounts of ground that is now occupied by wildlife and will destroy it forever. I hope you will vote for this important legislation which will help to save our environment.

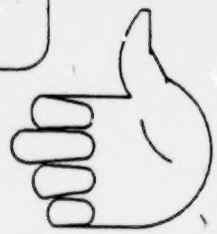
Sincerely,

Salmaan Shikari

These letters from 7th graders are the result of a project that combined several wonderful resources with the basic philosophy and policies of the Sierra Club. The **League of Conservation Voters** produces an Environmental Scorecard for $5 which details the environmental voting records of each state's representatives and senators in Washington, D.C. - a fascinating document for teachers to use in the classroom. It is a great "textbook" for political activism. And it's current and up-to-date. Another group, **20/20 Vision** provided us with a model of political letter writing that could be easily transferred to the classroom. In 1991 their members sent over 100,000 timely, personal letters to policy-makers. Their November postcard to members comments: "Congratulations. On November 1, 1991 the Senate refused to take up Senator Johnson's dangerous energy bill, S1220, and Senator Johnson concluded, "The environmental groups, I must say, wrote the textbook on how to defeat a bill, and my admiration to them for their political skill. One Senate legislative aide said his office had heard virtually nothing in favor of the bill, and had gotten an enormous amount of compelling calls and letters against this bill. So, students like Lauren and Sal can make a difference - and this is what kids have got to understand and realize. We as teachers need to encourage them to be involved. Write me if you want more information about either of these two groups.

SIERRA CLUB'S NEWSLETTER HIGHLIGHTING ENVIRONMENTAL ACTION IN THE CLASSROOM

Outstanding Teacher Resources For Classroom Use



Environment: The Science & Politics of Protecting Our Planet, is the newest program in ***Decisions, Decisions*** , a series of excellent computer-based classroom simulations designed for social studies, science and/or language arts classrooms. The simulation can last several days, or several weeks, depending on the need of the classroom teacher. It is a fascinating way to motivate and educate students about environmental issues. Every member of the class becomes an active participant, analyzing, discussing and researching various issues, and then coming up with possible solutions to problems. The simulation allows kids to think about their future as it relates to the environment. Waste disposal problems, source reduction and recycling, land use conflicts, endangered species and other local or national issues are among the many topics that come into play. Ultimately, students must examine the scientific information, balance political issues and then decide social policies for the community. The simulation is appropriate for fourth graders through high school seniors. The classroom teacher needs only a single computer to play the simulation. We highly recommend that you check into this environmental computer simulation, which is produced by:

Tom Snyder Productions
Call 800-342-0236 for a free catalog
Mention that you heard about it in
Sierra Ecology!

Marla BB is an incredible blues singer and environmental educator who is available to work with your school for one day , one week or one month. She has performed across the nation and internationally, asking kids to express their feelings about the environment through the arts - singing, dancing, poetry writing, drama, etc. Her dynamic workshops are interactive and productive for kids. She's worked with the Hudson River Sloop Clearwater as a musician and environmental educator. Last year she worked with my classes for a week, putting together a 60's coffeehouse, with each of my 38 students dressed in '60's attire, reading their newly created environmental poetry aloud while we sipped juice and ate donuts! Her list of credentials is long and impressive, but most of all, this woman motivates students about environmental issues in an exciting way.

Marla BB
c/o Ascending Productions TM
8200 Fenton Rd.
Philadelphia, PA 19118
215-233-2217

Please submit any student's names, phone numbers, poetry, other writings or photographs to:

Bob Vlahakis
c/o Sierra Club Newsletter
SWR Middle School
Randall Road
Shoreham, N.Y. 11786
(516)- 929-8500

BEST COPY AVAILABLE

The fight to save our environment must continue from generation to generation.

WATER IN YOUR HANDS

This 16-page, full-color, illustrated booklet focuses on awareness of water quality and management problems, importance of quality water for a quality life and what individuals can do to prevent water pollution and misuse.
Cost: $.75. Write for free brochure:
Soil and Water Conservation Society,
7515 N.E. Ankeny Rod, Ankeny, Iowa 50021

BEAT THE HEAT; the CO_2 Challenge
Teachers, this program offers your students a chance to learn about global warming and do something about it. Working with their families, each student makes a commitment to save energy in their daily lives, using a checklist to achieve a one-ton (two thousand pound) reduction in CO_2 for each household.
To find out how your class can participate write: Children's Earth Fund,
Box 2335, 175 Fifth Ave., NY, NY 10010

GOOD EARTH ART-ENVIRONMENTAL ART FOR KIDS

by Mary Ann F. Kohl/Cindy Gainer

Over 200 practical, easy and open-ended art experiences utilizing recycled and natural materials. These creative art projects develop an awareness of the environment and encourage a caring attitude towards the earth. Projects use materials collected from nature or saved from the trashbin. Results are bounded only by imagination. 224 pages.
Cost: $16.95. Order from: Bright
Ring Publishing, P. O. Box 5768,
Bellingham, WA 98227

SUN DAY

SUN DAY 1992: A Campaign for a Sustainable Energy Future, is not being planned as a one-day, one-shot event this year, instead they will encourage, support and launch ongoing educational media, organizing and other activities before, during, and after April 22.
To find out how you can participate,
write: Public Citizen, 215 Pennsylvania
Ave., S.E., Washington, DC 200-3 or
call 202-546-4996.

THE COMMUNITY FORUM

A number of PBS stations throughout the country will be conducting a pilot program in April featuring a mini-documentary on "Rivers" which will be followed by a community forum focusing on local river-related issues. This is an opportunity to use public television to focus student projects on these issues. Contact your local BPS station station and ask them when they expect to air the program. For more information call: Ann Pearson 207-439-5135.

ENDANGERED SPECIES COLORING BOOK

Designed to be a resource for educators and parents to introduce young children to endangered and threatened species and efforts to save them. 21 different plants, mammals, reptiles, fish and insects are depicted in their native habitat. While supplies last, individuals may obtain a complimentary copy of Endangered Species Coloring Book from EPA's Public Information Center,
US EPA, 401 M Street, S.W., Washington,
DC 20460

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Sierra Club
730 Polk Street
San Francisco, CA 94109

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SIERRAECOLOGY

NEWSLETTER OF THE SIERRA CLUB'S NATIONAL ENVIRONMENTAL EDUCATION COMMITTEE

Vol. 9, No. 3 Oct. 1991

TOO MANY OF US?

There are now more than 5.3 billion people on the planet, and the total is increasing by nearly 0.1 billion per year. If growth continues in current patterns, the total will be 8.4 billion by 2020. Can the planet support 8.4 billion people at our present level of consumption? Can we all live within renewable resource limits?

What's the problem? Use the following ideas as discussion starters.

- Many environmental problems are intensified by population growth. (Can you name some that are not?)
- As our numbers increase, we use more and more non-renewable resources such as oil. Population increases offset conservation efforts. (Explain how.) Eventually we must run out of these resources, with serious social and economic results. (Identify some limited resources and predict the effects of their exhaustion.)
- It takes decades of replacement-level reproduction (2 children per family) to achieve population stability. (Make a series of age distribution charts to show population momentum.)
- Most of the population growth is occurring in developing countries where people have neither education nor means to limit pregnancies. (Develop a graph of world population growth by continent.)
- Developing countries tend to lack resources to support their rapidly-growing populations. (Why do they lack resources, and where might they get them?)
- Each additional person in a developed country is about 25 times more harmful to resources than an additional person in a developing country. (Derive this from energy use figures. What conflicts might this cause between developing and developed countries?

What can we do about it?

The primary tool for population stability must be education and understanding.

- Discuss the effects of personal choices on society as a whole. (Read and discuss Hardin's "Tragedy of the Commons".)
- Identify and discuss the reasons why people chose to have children.
- Support international, state and local family planning education and funding.

For a list of educational aids and units for teaching about population issues, write: Population Committee
Frank Orem
1720 Argonne Drive
Concord, CA 94518

ATTENTION TEACHERS

How do you view your state's Environmental Education program?

1. Does your state have EE requirements for ___elementary, ___middle or ___high schools?

2. Do you think they are implemented locally? ___yes ___no

3. Do you feel that you get the support you need for your EE efforts and programs? __yes __no

4. Do you think EE should be mandated by the State EE Dept.? ___yes ___no

Additional comments invited.

Send information to Rick Stone,
Rt 1, Box 175 WA, Faber, VA 32938
or call: (804) 361-9347

EDUCATION NETWORK:

• Ken Baxter, Advisor
Beall H.S. Ecology Club
Eckhart Flat
Frostburg, MD 21532

• Joyce Cox, Teacher
Caldwell County Elementary
201 Short Street
Princeton, KY 42445
502-365-5150

• Heather Hypes
Old St. Pat's
700 W. Adams
Chicago, IL 60661

• Justin Oeltjen,
(Student Activist)
6054 Miller Lanina
Tallahassee, FL 32312
904-668-7281

• Pam Gingold
Northern California
Homeschool Association
3345 Santa Paula Drive
Concord, CA 94518

• Dave Brewer, Advisor
Mendota High School
302 16th Avenue
Mendota, IL 61342
815-539-7446

• Michaela de Liuda-Oleson
PO Box 42 GMLNC
Fairfield, VT 05455

• Angela Cianfrani,
Environmental Coordinator
West Windsor/Plainsboro
High School
2 Hamilton Drive
Cranbury, NJ 08512

• Andrea Rella,
(Student Activist)
38 Tall Oaks Drive
East Brunswick, NJ 08816
(Bishop George Ahr H.S.)

• Lisa Shingelo,
(Student Activist)
231 Franklin Street
Trenton, NJ 08658
(Trenton State College)

• Carrie Riker,
(Student Activist)
641 Kimball Avenue
Westfield, NJ 07070
(Trenton State College)

• Thomas Stock, Teacher
(Selden Middle School)
11 Ingelore Court
Smithtown, NY 11787

• Andrew Jackson,
Student Activist
5450 West Wheeler Road
Fayetteville, AR 72703
(Ramay Jr. H. S. Student)
501-442-5434

• Kris Carson,
Student Activist
2363 Holly
Fayetteville, AR 72703
501-443-2995

• Betsy Penix, Teacher
Walker Elementary School
Springdale, AR

• April Scott or Gary Letson,
Advisors
Monte Vista High School
8075 Presidio Drive
Cupertino, CA 95014

• Andrew Goodband, Advisor
Sacopee Valley High School
RR #1 Box 64
Cornish, ME 04020

• Chris McCullough
The Education Resource
Center of Rhode Island
50 Rounds Avenue
Providence, RI 02907
401-253-1752

• Yvonne Womack, Principal
Edward G. White Elementary
1136 West 122nd Street
Chicago, IL 60643
312-568-7861

• Michael Ashley,
Science Chairman
William T. Sherman School
1000 West 52nd Street
Chicago, IL 60609
312-268-2313

• Jim Rishebarger, Advisor
Palm Beach H.S.
1 Pirate Lane
Melbourne, FL 32901
407-952-5900

• Al Burman
Swift School
5900 N. Winthrop
Chicago, IL 60660

Welcome back to a new school year! For our first issue, we are including the names of those people who have contacted us directly about their desire to 'Network' and share with others. This list includes elementary, junior high and high school students, teachers, and principals - people working on a daily basis in our nation's schools. They are all deeply concerned about our planet, and have the energy to initiate projects, to spread the word, and to be leaders in the everyday challenge to treat our planet properly.

Some suggestions to using our networking list:

- *Call or write to someone on the list. Use Sierra Ecology as a way to introduce yourself.*
- *Find out about each other and discuss what the local issues are and what kinds of activities students are involved with, and what issues they're concerned about.*
- *Try to design a joint project - using local issues or perhaps a national issue - if an actual project together seems impossible, how about simply sharing the results of what you're doing with the other group by setting up a communication system between students.*
- *Communication and sharing between students and teachers throughout the country is an opportunity to encourage each other and remind us that what we do is important, and that all of our efforts are somehow linked toward a common goal.*

Good luck & please keep us posted!

Bob Vlahakis

• Ken Kelliher, Teacher
(Appleton East H.S.)
2121 Emmers Drive
Appleton, WI 54915

SIERRA CLUB'S NEWSLETTER HIGHLIGHTING ENVIRONMENTAL ACTION IN THE CLASSROOM

• Lora Stonebraker, Advisor
South Gate Jr. High School
4100 Firestone Blvd.
South Gate CA 90280

• Laura McCluskey, Advisor
Science Department
Parsippany Hills High School
Parsippany, NJ
201-682-2815

• Leslie Fretzin, Advisor
2035 N. Mobile
Chicago, IL 60639

• Sheri Sohm, KOPE Project
(Kids Organized To Protect
Our Environment)
Hawthorn Elementary School
1675 South 600 East
Salt Lake City, UT 84105
801-481-4824

• Miss Hettlinger, Teacher
St. Scholastica High School
7416 N. Ridge Blvd.
Chicago, IL 60645-2408

• Gloria Dobry, Teacher
Gunsaulus Academy
4420 South Sacramento Ave.
Chicago, IL 60632

• Tina Loos, H.S. Student
St. Ignatius College Prep
1076 W. Roosevelt Road
Chicago, IL 60608

• Gina Hilton, Teacher
(Elementary School)
97 S. Curondelet Court
Mobile, AL 36608
205-342-4544

• Suzann E. Brown, Teacher
Sand Lake Elementary School
PO Box 400, Rt. 43
Averill Park, NY 12018

• William Young,
Student Activist/Artist/Writer
1420 Snata Oak Drive
Norcross, GA 30093
404-925-9235

• Therese Devine, Teacher
Pacifica Manor School
411 Oceana Blvd.
Pacifica, CA 94044
415-355-3730

• Dawn Coughlan, Student
Activist
Delaware Nature Society
PO Box 700
Hockessin, DE 19707

• Nancy Franz, Teacher
Rt. 1 Box 39F
Washburn, WI 54891

• Alec Young,
Student Activist
1420 Shanta Oak Drive
Norcross, GA 30093

• Larry Clark, Advisor
La Jolla High School
750 Nautilus Street
La Jolla, CA 92037

• Diane Cuniberti, Principal
Oxford Central School
Oxford, NJ
908-453-4101

Trista Claxon,
High School Student Activist
(President's Environmental
Youth Award Winner!)
2137 Georgian Way
Lexington, KY 40504
606-278-4126

• Denise or Glen Whetzel
(High School Teachers)
6000 N. Woodruff Avenue
Lakewood, CA 90713

The following teachers were all part of our Educator's Workshop this summer:

• Patricia Buney
2410 South Elm
Sanford, FL 32771
407-330-2972

• Antonia Daly
142 Sullivan Street
New York, NY 10012

• Margaret Dixon
6268 Kirby Downs
Memphis, TN 38115
901-795-8634

• Ron Drozd
519 East Main
Madison, IN 47250
812-265-4302

• Coleen Hassett
90-23- 221st Street
Queen Village, NY 11428
718-468-3774

• Wende Harper
218 Four Brooks Road
Stamford, CT 06903
203-322-6754

• James Hay
1300 5th Avenue #24
Delano, CA 93215
805-721-0551

• Dr. Clarence Heard
(University of Central Fla.)
1209 Howell Creek Drive
Winter Springs, FL 32708

• Jerry Heard
144 El Nindo Road
Portola Valley, CA 94028
415-851-2718

• Virginia Hilsman
14510 Blind Shady Road
PO Box 753
Nevada City, CA 95959

• Kathleen Hooper
4224 East Broadway
Long Beach, CA 90803

• Joanna Hughiiff
21003 Reserve Court
Fairview Park, OH 44126

• Ken Koppenhoefer
1770 King Henry Drive
Kissimee, FL 34744
407-846-7574

• David Livingstone
PO Box 1695
Paso Robles, CA 93447
805-995-0862

• Juliette Lowins
1110 Wesley Avenue
Evanston, Il. 60202
708-864-0041

• El-Hawri Moam
111 Northwest Teakwood
Lees Summit, MO 64064
816-478-6144

• Corina Yuen
1235 Rosehill Drive N.W.
Calgary, AB
Canada
403-282-6291

Please submit any student's names, phone numbers, poetry, writings or photographs to:

Bob Vlahakis
c/o Sierra Club Newsletter
SWR Middle School
Randall Road
Shoreham, N.Y. 11786
(516)- 929-8500

Don't be shy. Share your special projects!

• James Orben
PO Box 13
Funks Mill Road
Springtown, PA 18081

• Steve Robins
The Buckley School
3900 Stansbury Ave.
PO Box 5947
Sherman Oaks, CA 91413

• Joseph Rolands
22448 Lakeland
St. Clair Shores, MI 48081
313-445-8276

• John Roos
4861 Squaw Valley Court
Placerville, CA 95667
916-626-3816

• Randy Siercks
The Buckley School
3900 Stansbury Ave.
PO Box 5947
Sherman Oaks, CA 91413

• Rick Stone Wellbeloved
RT. 1 Box 175 WA
Faber, VA 22938
804-361-9347

• Craig Stowell
1920 Oakland Ave. Apt. 203
West St. Paul, MN 55118
612-455-4752

• Marianne Wedmore
5 Cornelia Ave.
Mill Valley, CA 94941
415-383-1542

• Patricia Wherry
16827 Park Place #32
Eagle River, AK 99577

The fight to save our environment must continue from generation to generation.

TEACHER'S 20% DISCOUNT on children's books is available at the Sierra Club Store in San Francisco. For a list of books available by mail order, please request a Mail-Order-Service-Guide by calling 415-9230-5500 or by writing to the Sierra Club Store, 730 Polk St., San Francisco, CA 94109.

* * * * *

GRANTS FROM EPA

The Environmental Education Grant Program has two categories: small grants of up to $5,000 which will constitute 25% of the grant resources and larger grants of up to $250,000. The number of grants given will be determined by actual Congressional appropriations. These grants are designed to support state and local education, not-for-profit programs, or non-commercial broadcasting efforts and will be awarded on an annual competitive basis. Write: George Walker, 401 M Street, S.W., EPA, A 107, Washington, DC 20460

* * * * *

P3

An Earth-based Magazine for Kids. P3, named for earth's position as the 3d planet from the sun is fun, to read, informative and most important, interesting. Never talking down to kids it deals exclusively with environmental issues. Write: P3 Magazine, P. O. Box 52, Montgomery, VT 05470. A must for every school library.

FREE - POPULATION/ENVIRONMENT KIT

The Sierra Club Population Committee has prepared a free teaching kit for teachers Grades 1-12.

The kit consists of:

- A sheet of ideas for developing lessons and leading discussions on population problems suitable for Grades 5-12.
- Population Musical Chairs - An adaptable lesson plan for Grades 1-12.
- Sierra Club pamphlet: Overpopulation.
- A current listing of Population Reference Materials & Newsletters.
- Table-top Display instruction kit.
- ZPG Catalog of Population teaching materials.
- Short Population Bibliography.
- Personal Commitment to Action
- Fact sheets on overpopulation effects on the environment.

To get a kit write: Frank Orem
National Population Committee,
1720 Argonne Drive, Concord,
CA 94518

* * * * *

As of Jan. 1990, world population was 5.3 billion and increasing at a rate of 93 million a year. The continuing rapid rate of population growth is a core problem contributing in a major way to most environmental problems.

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Sierra Club
730 Polk Street
San Francisco, CA 94109

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SIERRAECOLOGY

NEWSLETTER OF THE SIERRA CLUB'S NATIONAL ENVIRONMENTAL EDUCATION COMMITTEE

Vol. 9 No.2 March 1991

KICK THE OIL HABIT

Addiction to oil threatens American lives, the stability of our climate, and our economic security. The preservation of our environment is worth a major national commitment to energy efficiency and secure, renewable energy sources. The Sierra Club has planned a major national campaign consisting of a series of national and regional activities to help us "Kick the Oil Habit."

Unit Plan for Teachers

What's the problem?

1. Oil is a fossil fuel. Discuss nonrenewable vs renewable fuel.
2. How is oil used? This would make a good bulletin board idea. Show forms of transportation, electrical appliances, lighting fixtures, etc. Almost everything we use is dependent on oil.
3. How much of the world's supply does the U.S. use? How much do third world countries use? A pie design can be used to illustrate this.
4. What happens when there's a power outage? How dependent are we on electricity? To illustrate this idea, the bulletin board made for Question #2 could be retitled. Students could make lists of things they would be unable to use at home and at school.

What can we do about it?

1. How can we cut back our use of oil? Buy energy efficient appliances and light bulbs. Walk more and raise gas mileage standards.
2. Where can we find alternate sources of energy? Look to renewable sources - solar and wind.
3. What else can I do? Write your members in congress and ask them to support the development of a bill that would be an alternative to the inadequate Johnston Energy Act of 1991 now being proposed.

Unless we can cut back the use of oil and develop cleaner, safer alternate sources of energy, we can expect more spills, more polluted air, more radioactive waste, more global warming and possibly more conflict in the Middle East.

For a list of free and inexpensive education aids available for teaching about energy, write: Pat Suiter, P.O. Box 557953, Miami, FL 33255. Send a SASE legal size, for your free list.

Environmental Job and Career Opportunities

ENVIRONMENTAL OPPORTUNITIES is a leaflet published by the Environmental Studies Dept., Antioch/New England Graduate School. Editor: Sanford Berry, Box 4957, Arcata, GA 95521. This publication is available to any Sierra Club member upon request.

* * * * * *

The CEIP Fund matches qualified junior & senior undergraduates, graduates, doctoral students, entry-level environmental job seekers, and recent graduates, for short-term environmentl positions (3-6 mos and longer.

For information Write: CEIP Fund, 68 Harrison Avenue, Boston, MA 02111-1907

EDUCATION NETWORK:

Young Students Across U.S.A. About A Common Issue

Dear Mr. Vlahakis,

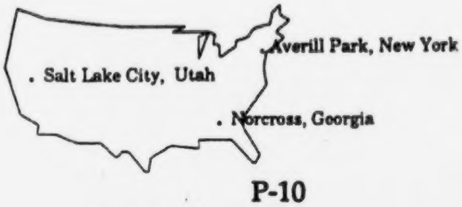
My name is William Young and I am nine years old. I am very interested in caring for the Earth, particularly in encouraging people to reduce, reuse and recycle, and to see how our human lives are tied to everything else on Earth. I am a writer - my work has been published in Stone Soup and Youthview, but I am very interested in using my comic characters, two brothers named Moe-hawk and Buzz, in cartoons that point out how ridiculuous and harmful our wasteful ways are. Enclosed is a copy of one of my cartoons. I heard about your Sierra Club youth newsletter, and I would like to help.

Sincerely,

William Young
Norcross, Georgia

William Young

This issue highlights students from:



SIERRA CLUB'S NEWSLETTER HIGHLIGHTING ENVIRONMENTAL ACTION IN THE CLASSROOM

Express Themselves Creatively & Concern: Garbage

"The Growing Garbage Mess"

by Ben Barshied
5th Grade
Sand Lake Elementary School
Averill Park, New York

There is a growing problem that concerns us all. The problem affects many of us. This huge problem is garbage. Where can we put it? What can we do with it? There is a common and simple answer to all of these questions: recycle. Another more costly solution would be incineration.

If we do not use one of these solutions soon, we may find ourselves buried under a mountain of garbage. In 1986 alone, we produced 315.4 billion pounds of garbage. This includes household and institutional garbage to toxic chemicals and radioactive wastes from atomic power plants, nuclear medicine facilities and weapons factories.

These wastes are made up of seven main materials including paper products, yard wastes, metals, glass, plastics, food wastes, and miscellaneous items such as rubber, leather, textiles, and wood.

Instead of figuring out how much garbage we produced, we should figure out ways of decreasing these amounts of refuse. The two ways we stated earlier in this report, incineration and recycling, are solutions to the rubbish mess.

Recycling, which in my opinion is the best way to deal with our dilemna, is beginning to be a widespread operation. It involves the separation of household trash and yard wastes. It is then picked up by large trucks and sent to the processing plants where people recover valuable materials from it. One of the plusses of recycling is that it reduces the amounts of wastes being produced and gives us materials to manufacture with.

The other possibility, which is much more costly, is incineration. There are three major downfalls with incineration; it is expensive, it may pollute the air and it causes toxic ash. The ash is heavy in metal and must be disposed of carefully. That is why incineration is so expensive. The places where this ash is dumped have to be lined with plastic and compacted clay. Plus to add to the expense, a new law passed in 1987 forces incinerators to use special equipment to limit the amount of air pollution. These devices include such things as electric precipitators which electronically remove ash from the air.

Even though the garbage crisis may seem very dismal, right now things are being done to help it. Large companies such as McDonalds are recycling their foam containers and making useful things from them. Scientists are making such things as bricks to safely hold the ash from incinerators. Scientists are also developing new plastics that degrade in just 15 months.

Whatever we do, we must do it fast or we will find ourselves buried under a mountain of garbage. Maybe even you might one day find a solution to "The Growing Garbage Mess."

"The Destruction of Planet Earth"

by Tony DeHaan
Age 13, 7th grade
Hillside Intermediate School
Salt Lake City, Utah

I am garbage.
The earth will soon be mine.
I live in the past, the present, and the future.
I am in the oceans, on the streets, and in the air.
I am everywhere.

I am garbage.
I am constantly being fed.
My allies are people, factories, and government.
I am growing and will someday destroy the earth.
No one will stop me.

I am garbage.
The earth is cluttered with me.
I am buried, dropped, or even dumped.
The land and sea are full of me.
I spread around the earth.

I am garbage.
My only weakness is caring people.
Conservation slows me by recycling what is mine.
An educated and caring youth scare me.
The earth is mine . . or is it?

Thanks to the great respones to our first issue. Responses are coming in from all over the country!

- - - - - - - - -

Please submit any student's names, phone numbers, poetry, other writings or photographs to:

Bob Vlahakis
c/o Sierra Club Newsletter
SWR Middle School
Randall Road
Shoreham, N.Y. 11786
(516)- 929-8500

Don't be shy. Share your special projects!

The fight to save our environment must continue from generation to generation.

Summer Sierra Club Environmental Workshop · 1991

Clair Tappaan Lodge in the Sierra at Norden, California

- Explore diverse habitats
- Meet experts in the field
- Special electives to enjoy the environment
- Focus on current issues affecting the global environment

6th Annual Program for Educators

Sun. July 7 — Sun. July 14, 1991

Cost*:	*Adults*	*$260*
	Teens	*195*
	Children (7—12)	*190*

This workshop is designed for environmental education professionals, teachers and their families.

◆

****Cost includes room, board, tuition, insurance, trips, snacks, and special materials and resources.***

PRE-REGISTRATION FORM

Name ______________________________

Address ____________________________

City, State, Zip ________________________

Phone ______________________________

Choice of workshop

Do you wish teaching credits?

***Deposit** (non-refundable) $50 / $10 Late fee after May 1.*

To register or receive additional information, send to:

Sierra Club Workshop, c/o Executive Office
Sierra Club, 730 Polk St., San Francisco, CA 94109
or call:
Michelle Perrault, Workshop Director, 415-283-6683

OUR ENVIRONMENT:
A study unit to promote critical and creative thinking. This comprehensive study unit teaches children important ecological concepts. It acquaints them with problems that exist in our environment and helps them see that they can help solve them. Grades 3-7. Book and Poster Set $12.95, Book only $9.95 or Poster only $4.95. Write: Educational Impressions, 210 Sixth Ave., P.O.Box 77, Hawthorne, NJ 07507

* * * * * * *

FLAGSHIP EARTH

Here is how your school can obtain a beautiful 3'x5' FREE global flag called Flagship Earth. Designed by a third grade student in California, it is a beautiful photograph of Earth from outer space with the words "Many Cultures--One World, and a Living Planet for All Humanity and Diversity of Life." For more information write: Friends of Flagship Earth, Flagship Earth Found., 65 Washington St., #200, Santa Clara, CA 95050

* * * * * * *

Attention LIBRARIANS

Have you seen
THE ENVIRONMENTAL INDEX?
Designed to meet students' needs, The Index provides citations to articles in nearly 1,000 of the most important U.S. publications. For a brochure write: U.M.I. Data Courier, 620 S. Third St., Louisville, KY 40202-2475 or call 800-626-2823

SIERRAECOLOGY
Sierra Club
730 Polk Street
San Francisco, CA 94109

SECTION Q

Glossary

GLOSSARY

Abiotic: Relating to non-living components of the environment such as air, water, sunlight, and minerals.

Acid rain: Rainfall containing sulphuric and nitric acid. These acids form when sulfur dioxide and nitrous oxide emissions from the burning of fossil fuels combine with water vapor in the atmosphere.

Adaptation (biological): Any structural or physiological characteristic that allows an organism to exist under the conditions imposed by its habitat.

Aerosol: A suspension of liquid or solid particles in the air.

Biodegradable: Capable of being decomposed quickly by the actions of microorganisms, sunlight, chemical attack, etc.

Biomass: The total mass of living matter in a given place at a given time.

Biosphere: The portion of the earth and its atmosphere capable of supporting life.

Biotic: Relating to living factors in the environment; plants and animals.

Buffering strategy: A plan to protect or buffer oneself from unforeseen factors by providing alternatives.

Carnivore: An organism whose diet is made up primarily of animal tissue.

Carrying capacity: The amount of living matter an area will support indefinitely.

Clearcutting: The practice of clearing large areas of a forest of all mature trees.

Climax community: An assemblage of plants which produces conditions favoring its own perpetuation, and which will not undergo transition unless disturbed by external forces.

Community (biological): An interacting assemblage of plants and animals.

Compaction: Reducing the bulk of solid waste by rolling and tamping.

Composting: A controlled process of degrading organic matter by means of microorganisms.

Consumer (biological): An organism that obtains vital nutrients and energy by eating other organisms; in the food chain, all organisms other than green plants.

Cultural: Relating to learned and traditional behavior rather than to innate characteristics. The distinction between the two is extremely difficult to make in practice. Also used to refer in general to the works and effects of humankind, as opposed to those of the rest of the universe.

Decay: The breakdown of organic matter into simpler conpounds due to the digestive action of microoganisms such as bacteria or other decomposers.

Decibel: A unit of measurement used in describing the loudness of sound.

Decomposers: Organisms that break down dead organic matter, releasing raw materials into the environment.

Demography: The statistical study of populations, especially with reference to size and density, distribution, and vital statistics.

Dynamic equilibrium: A condition in which the components of a system (for instance, the numbers of prey and predator individuals) fluctuate around a mean rather than maintaining a rigid state of balance with respect to one another.

Ecology: The study of the relationship of living things to one another and to their environment.

Ecosystem: The interacting system of a biological community and its nonliving environment.

Effluent: Any material discharged into the environment. Most commonly used to refer to noxious materials such as sewage or gaseous pollutants.

Energy: The capacity to do work; the capacity of acting.

Environment: The sum of all external conditions and influences affecting the development and survival of an organism.

Erosion: The wearing away of the earth's surfaces by forces such as rain, wind, and gravity.

Floodplain: That part of any stream valley which is or has been periodically inundated during floods.

Food chain: A predator - prey relationship in which a single species feeds upon another single species, which in turn feeds upon another single species, and so on. As a result, energy in the chain flows in one direction, generally from primary producers to herbivores to carnivores. There are probably few if any such simple food chains in nature. Predator - prey relationships are better described as food webs (see below).

Food pyramid: A graphical means of illustrating the relative numbers of individual predators and the number of prey individuals needed to support them. The broad base represents the many individuals that are preyed upon but are not themselves predators of the other species in the pyramid. Each higher level is composed of the individuals that prey upon those in the lower levels. Each of these higher levels is smaller than the one below it because energy is lost in converting the energy in the prey into usable energy for the predators.

Food web: Several food chains joined together to form a branching pattern, reflecting the fact that more than one predator may prey upon a single species, and that a single predator may feed upon several prey species. The flow of energy in the web likewise branches and can even be reversed.

Fossil: The solidified imprint or remains of ancient plant and animal life.

Geomorphology: The study of land forms; the description and interpretation of the earth's relief features.

Geothermal: Relating to the heat in the earth's interior, and to the use of the steam formed when water comes in contact with this heat.

Greenhouse effect: The heating produced by atmospheric carbon dioxide (CO_2). Short-wave radiation from the sun passes through the CO_2 in the atmosphere on its way to the earth, is absorbed by the earth's surface, and re-emitted by the earth as relatively long-wave (infrared) radiation. Unlike the radiation received directly from the sun, this radiation emitted by the earth does not easily pass through the CO_2 layer and is retained in the atmosphere, which it warms.

Groundwater: A supply of fresh water under the earth's surface in an aquifer or the soil. This water acts as a natural reservoir that can be tapped for human consumption.

Groundwater runoff: Groundwater, spring, or seepage water that is discharged into a stream channel.

Herbivore: An organism tha feeds primarily on plants.

Igneous rock: Rock formed by solidification of molten material.

Leibig's Law: A principle stating that the number of individuals in an environment is limited by the amount of the scarcest element necessary to maintain life in that environment.

Life zone: A broad geographical region typified by certain kinds of plant and animal communities and climatic conditions.

Limiting factor: The physical needs that determine the survival of a species, such as heat, water, air supply, light, food.

Marsh: A wetland whose vegetion is primarily grassy. Marshes provide an important habitat for a variety of plant and animal life.

Metamorphic rock: Rock formed when pre-existing rock is modified by heat and pressure.

Niche: The function of an organism within the comunity.

Non-renewable resources: Natural resources that are limited in supply and may eventually be depleted; petroleum, coal, copper, zinc, gold, uranium, etc.

Ozone: A pungent, colorless, toxic gas. Ozone is one component of photocheical smog and is considered a major air pollutant.

pH: A measure of the acidity or alkalinity of a material, liquid or solid. The pH scale ranges from 0-14, with 7 representing a neutral state. 0 represents the most acidic and 14 the most alkaline.

Pioneer plant: The first naturally occurring species of plant to inhabit a newly-established bare area created by burns, floods, cutting, or other means. The establishment of pioneer plants is the first step in ecological succession.

Population: Any group of organisms of the same species that occupies a given space at a given time.

Predator: An organism that obtains nourishment by killing and consuming other animals.

Primary consumer: An animal that subsists mainly on producers (green plants).

Producer: An organism that produces its own food from elements in the environment; green plants.

Recycling: Reprocessing materials for re-use. The process by which waste materials are transformed into raw materials which are then used in new products.

Renewable resources: Natural resources that, through management, treatment, development, or other means, may be restored or replenished; wind, solar, geothermal, hydroelectric, plants, and animals.

Resource recovery: Basically the same as recycling, but also includes the extraction of energy from waste material.

Riparian: Relating to the edges of a watercourse; e.g., riparian vegetation.

Scavenger: An organism that obtains nutrients from dead animals.

Secondary consumer: An animal that feeds on primary consumers; usually carnivores.

Sedimentary rock: Rock formed by deposition and solidification of sediments such as sand, silt, and clay.

Succession: The gradual, predictable replacement of one community by another. The successional community itself creates the conditions that lead to its replacement by another community. Succession ends with the climax community.

Temperature inversion: A condition in which cooler, denser air underlies warmer, lighter air and is thus prevented by gravity from vertical mixing and dispersion. Such a condition acts to trap air pollutants near the ground.

Troposphere: The layer of atmosphere extending seven to ten miles upward from the earth's surface. Vital to life on earth, it contains clouds and moisture that reach the earth as snow or rain.

Turbidity: Discoloration of water due to suspension of sediments.

Watershed: Drainage basin; an area of land drained by a given stream.

Water table: The upper level of ground water.

This manual was funded in part by a grant from the Sierra Club Foundation's Christopher Karlin Memorial Fund. The fund was established in 1977 by John and Susan Karlin in memory of Christopher Karlin's life-long interest in wilderness areas and wilderness preservation.

SIERRA CLUB

SOURCEBOOK

CONVERT YOUR CONCERN
ABOUT THE HEALTH OF
THE PLANET INTO EFFECTIVE
ENVIRONMENTAL ACTION

SIERRA
CLUB

730 Polk Street
San Francisco, CA 94109
415/776-2211

Dear Friend of the Environment,

As the Sierra Club begins its second century, we encourage you to be part of the solution to the environmental challenges of the nineties. Together, we can make a difference. By opening this booklet, you have taken the first step.

The Sierra Club receives a large number of requests for help and information every day. For this reason, we developed the SIERRA CLUB SOURCEBOOK. It contains information about many of the issues the Club is involved in and describes the materials available to you.

The Sierra Club is a grassroots organization. There are chapters and groups in every state working on local, state, and national environmental issues and sponsoring day and weekend outings. If your immediate concern is about a local issue, please contact the chapter in your area. (See the list beginning on page 26.)

We hope you will find both this SOURCEBOOK and any publications you order to be useful and informative.

Sincerely,

T. Anthony Ruckel,
President, Sierra Club

P.S. If you are not a member of the Sierra Club and you want to receive the substantial member discount available on most publications, join today by filling in the membership application on page 29. To ensure that you become a member promptly, remember to mail it separately from your SOURCEBOOK order.

Production of the SOURCEBOOK was funded by the dues and contributions of the members of the Sierra Club.

NOVEMBER 1992

SIERRA CLUB SOURCEBOOK

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The SOURCEBOOK is printed with soybean ink on unbleached, recycled newsprint, made from 100% post-consumer waste. All of the booklets, brochures, posters, fact sheets, and policy statements listed in the SOURCEBOOK are printed on recycled paper.

SOURCEBOOK designed by John Byrne Barry.

How many more people are added to the world's population every day?

Answer on page 21.

TRUE or FALSE: The Endangered Species Act is a major obstacle to development.

See back cover.

TRUE or FALSE: Technology is neutral.

Answer on page 11.

BEST COPY AVAILABLE

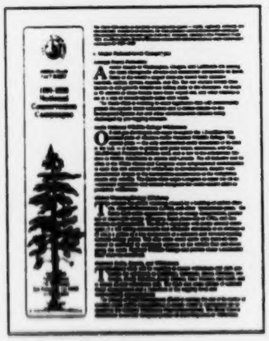
Activists make a difference!

Whether you're lobbying your state legislators, cleaning up a beach, or stuffing envelopes, you can help in the fight to protect our environment.

HOW TO BECOME AN ENVIRONMENTAL ACTIVIST
by Judith Kunofsky.
Member $.50
Non-member $1.00
(1984) #101

Influencing public policy

The Sierra Club works on hundreds of conservation issues — locally, regionally, nationally, and internationally. In order to be effective, the Club selects priority national conservation campaigns that correspond to the two-year cycle of Congress.



NATIONAL CONSERVATION CAMPAIGNS SUMMARY
Member $.25
Non-member $.50
#301

ENVIRONMENTAL PROTECTION BEGINS AT HOME
More than 40 things you can do at home.
FREE!
(Limit one per order)
(1990) #102

THE RIGHT TO WRITE
by former Rep. Morris Udall (D-AZ).
How to write letters that influence elected officials.
Member $.25
Non-member $.50
(1967) #204

NATIONAL CONSERVATION ORGANIZATIONS
Names and addresses.
Member $.25
Non-member $.50
#103

CALIFORNIA CONSERVATION ORGANIZATIONS
Names and addresses.
Member $.25
Non-member $.50
#104

FEDERAL GOVERNMENT OFFICES
Addresses of agencies overseeing environmental protection.
Member $.25
Non-member $.50
#205

SIERRA CLUB SOURCEBOOK
You're reading it now!
FREE!
#105

NOTE:
Those publications that do not list dates are updated regularly.

BEST COPY AVAILABLE

SOCIALLY RESPONSIBLE INVESTING & INFLUENCING CORPORATE BEHAVIOR
Includes the Valdez Principles.
Member $.25
Non-member $.50
(1990) #106

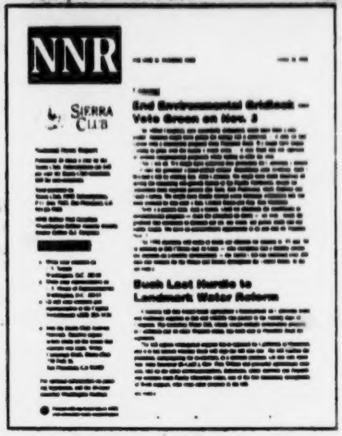
WHAT YOU CAN DO
Find out what you can do to help solve the garbage crisis, save tropical rain forests, stabilize world population, protect our coasts, and keep the Great Lakes great.
Order all five :
Member $1.25
Non-member $2.50
#850

(WHAT YOU CAN DO brochures are listed individually on pages 10, 17, 20, and 21.)

SIERRA CLUB POLITICAL COMMITTEE
The Green vote counts. Find out about the role that the Sierra Club plays in elections.
Member $.25
Non-member $.50
(1991) #201

SIERRA CLUB ENVIRONMENTAL HEROES
Booklet highlighting 100 Sierra Club volunteers who are making a difference.
Member $2.50
Non-member $5.00
(1991) #838

Issues That Matter— 24 Times a Year



NNR

SIERRA CLUB

End Environmental Gridlock — Vote Green on Nov. 3

Bush Last Hurdle to Landmark Water Reform

The global environment is in peril. What we do in the next few years — or what we fail to do — could decide the course of environmental protection for decades to come.

Action is needed on a host of critical issues from the California desert to the South American rain forests. These are issues that matter. And you'll find them in every edition of the **National News Report.**

NATIONAL NEWS REPORT
Sample copy.
Member $.25
Non-member $.50
#842

One-year subscription (24 issues a year)
Member $18.00
Non-member $20.00
#843
(Do not include this subscription cost in your "purchase amount" for calculating shipping charges on the order form.)

BEST COPY AVAILABLE

❝ Before I came to Sierra Club. I was unaware that there was a grassroots environmental group in Kansas City where I could actually do something.❞

—Barbara Conover
Sierra Club activist
Kansas City, Missouri

"I've been a member of several environmental groups that you send money to and get mailings from. But I was looking for a way to put my interest in the environment to work.

"I didn't come to Sierra Club with expertise in any specific conservation issues, but ever since grade school, I've been organizing volunteers. I've been able to put that skill to work — overtime — for the Sierra Club.

"I feel my strongest contribution to the Club is in developing leadership skills in others. You could work for years on an issue, but without a new supply of leaders, your work goes down the drain. The greatest weakness facing grassroots activism is that there are never enough people to do the job."

Sierra Club Activist Network

An important environmental bill is pending in Congress and several key legislators are still undecided. That's where the Sierra Club Activist Network comes in, flooding Capitol Hill with letters and phone calls that make a difference.

No one has more clout than you — a constituent. And by pooling your efforts and enthusiasm with fellow activists, like the 84,000 letter-writers who make up the Activist Network, your effectiveness is greatly multiplied.

The Sierra Club maintains lists of activists by issue, which can be sorted by state or congressional district. By contacting activists in key areas and asking them to contact their legislators, the Activist Network concentrates the Club's resources where they do the most good.

SIERRA CLUB ACTIVIST ENROLLMENT FORM
(Only Club members can be part of the Activist Network.)
FREE!
#840

> "In my fourth grade class, all we care about is our grades and the rain forest. I want to know how to stop this chainsaw massacre."
>
> —from a letter written to Sierra Club by Chistopher Michael Figueroa, Indianapolis, Indiana

ENVIRONMENTAL EDUCATION RESOURCE LIST
Names and addresses.
Member $.25
Non-member $.50
#206

GREEN GUIDE
An Educator's Guide to Free and Inexpensive Environmental Materials

Over 500 teaching aids covering 72 topics are listed.
Member $6.00
Non-member $8.00
#220

JOHN MUIR KIT
Information about the naturalist, writer, and founder of the Sierra Club. Includes biographical material, bibliography, and bookmark. Good classroom materials.
Member $1.00
Non-member $2.00
#207

ENVIRONMENTAL BOOKS
A list of significant books about environmental issues.
Member $.25
Non-member $.50
#208

SIERRAECOLOGY
Sample issue of newsletter with ideas for classroom activities.
Member $.25
Non-member $.50
#209

🕮 STARTING SMALL IN THE WILDERNESS: The Sierra Club Outdoors Guide for Families
by Marlyn Doan.
Suggestions for family activities, including which ones are right for what age levels.
Paper, 273 pages
Member $9.85
Non-member $10.95
(1991) #212

Many children, perhaps because they are small and closer to the ground than we, notice and delight in the small and inconspicuous. With this beginning [illegible] share with th[illegible] beauties [illegible]

#222

SLIDE SHOWS
One-week rental:
Member $15.00
Non-member $20.00

ACID RAIN:
The Choice Is Ours
20 minutes, 1980

THE TROPICAL RAIN FOREST
30 minutes, 1988

WE ARE THE SIERRA CLUB
14 minutes, 1985

Consolidated Media Services
2565 Cloverdale Ave.,
Suite C
Concord, CA 94518-9955
(415/680-0651)

Please specify the title of the program, the date(s) you want it (as well as an alternate date). Include your name, address, day-time phone number, and a check or money order. All orders must be pre-paid.

Or get the order form:

SIERRA CLUB AUDIOVISUALS ORDER FORM
Includes a description of the programs listed on pages 6 and 7 and an order form.
FREE

VIDEOS
(VHS only)
One-week rental:
Member $10.00
Non-member $15.00

ARCTIC REFUGE:
Treasure of the North
25 minutes, 1987

THE FOREST ROADS PROGRAM: Destroying Trees and Trails
21 minutes, 1986

GRAND CANYON
The Price of Power
(Narrated by Bruce Babbit)
18 minutes, 1992

GLOBAL WARMING ACTIVIST VIDEO
15 minutes, 1989

HELLS CANYON
28 minutes, 1991

RE-USE IT OR LOSE IT
(Garbage/Recycling)
20 minutes, 1990

THE SILENT EXPLOSION
(Overpopulation)
20 minutes, 1987

THE TROPICAL RAIN FOREST
Slide presentation on video
1988

WE ARE THE SIERRA CLUB
Slide presentation on video
1985

WHAT IS THE LIMIT?
(Overpopulation)
23 minutes, 1987

Which nations have the highest population?
See page 21.

FILMS

One-day rental: $15.00 (unless otherwise indicated)

ALASKA: LAND IN BALANCE
25 minutes, elementary school through adult, 1977

A CLOSER LOOK, with Michael Godfrey (natural cycles)
29 minutes, 1979

COASTS FOR THE FUTURE: Saving America's Shores
9 minutes, elementary school through adult, 1979
One-day rental: $10.00

GLEN CANYON
26 minutes, junior high school through adult, 1965

THE GRAND CANYON
26 minutes, 1967

NATURE NEXT DOOR
28 minutes, 1962

NO ROOM FOR WILDERNESS?
26 minutes, upper grade school through adult, 1968

OFF-ROAD CONTROVERSY
27 minutes, junior high school through adult, 1973

OIL! SPOIL! PATTERNS IN POLLUTION
1[illegible] minutes, junior high school through adult, 1972
One-day rental: $12.50

THE REDWOODS
20 minutes, junior high school through adult, 1968
One-day rental: $12.50

TWO YOSEMITES
10 minutes, junior high school through adult, 1967
One-day rental: $10.00

FILMSTRIPS

Two-week rental: $12.00

EXPLORING OUR WORLD

- The Interdependence of Nature
  For grade levels 4 - 6
- John Muir
  For grade levels 5 - 7
- The Lorax
  For grade levels 2 - 5
- The Old Bullfrog
  For grade levels K - 1
- Will They Survive?
  For grade levels 3 - 7

FOR SALE

The following videos can be purchased as well as rented. Follow the same procedures on page 6 as for renting them. (Do not use the SOURCEBOOK order form to rent or buy audiovisuals!)

WE ARE THE SIERRA CLUB
Member: $20.00
Non-member: $25.00
(Slide show also available for $85.00)

THE TROPICAL RAIN FOREST
Member: $20.00
Non-member: $25.00

GLOBAL WARMING ACTIVIST VIDEO
Member: $20.00
Non-member: $25.00

Our public lands are under siege!

What kind of world will we have if we continue to allow our ancient forests to be clearcut, and the air and water in our national parks and wilderness areas to be polluted? For 100 years, Sierra Club has shown that citizen activists can effectively stop the destruction of America's precious public lands.

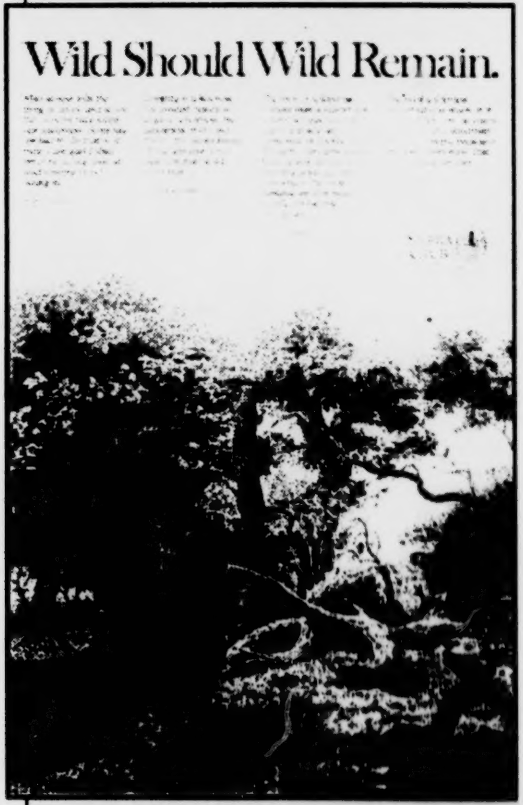
> "Today I have grown taller from walking with the trees."
>
> — Karle Wilson Baker

NEW!

AMERICA'S WETLANDS: Why They're Everybody's Business

America's Wetlands: Why They're Everybody's Business

Wetlands rank among our most vital natural resources. Find out how they are at risk and why they need stronger federal protection.
Member $.25
Non-member $.50
(1992) #615



WILD SHOULD WILD REMAIN (Poster)

This 22" x 34" color poster captures the beauty and meaning of America's wildlands. Includes quotes from great environmental thinkers.
REDUCED PRICE WHILE SUPPLIES LAST:
Member and non-member $2.00
(1989) #343

SPECIAL:
Heavy stock suitable for framing.
Member and non-member $5.00
#344

BEST COPY AVAILABLE

HOW TO GAIN FUNDING FOR LOCAL FEDERAL LAND ACQUISITION

by John Hopkins. How to protect wildlife and habitat by lobbying the government to buy land.

Member $.25
Non-member $.50
(1990) #405

NOWHERE ELSE ON EARTH

Ninety percent of our ancient forests have already been logged. This color brochure presents compelling evidence for protecting our few remaining ancient forests. Includes 13 color photographs.

Member $.50
Non-member $1.00
(1991) #451

PRESERVING NATIVE BIODIVERSITY

by John Hopkins. This factsheet outlines the Sierra Club's strategy to protect the biological diversity of ecosystems in the U.S. and Canada.

Member $.50
Non-member $1.00
(1991) #453

OUR LAST ARCTIC WILDERNESS

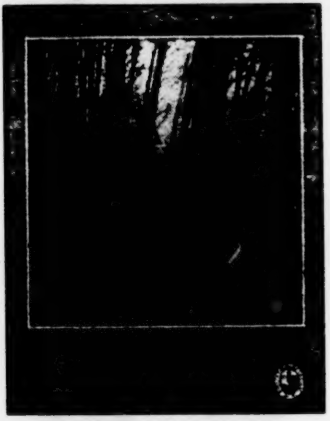
This factsheet describes the oil development threats to the biologically rich Arctic National Wildlife Refuge ecosystem.

Member $.25
Non-member $.50
(1990) #430

Seven Sierra Club publications to help you get closer to the land.

SIERRA CLUB PUBLIC LANDS BOOKLETS

These seven booklets are invaluable resources for unlocking our nation's public lands systems. Full listings of parks, refuges, wilderness areas, rivers, forests, and trails, with maps, acreage and mileage figures, addresses and background information.



- Bureau of Land Management #426
- National Forest System #416
- National Park System #417
- National Trails System #418
- National Wild and Scenic Rivers System #419
- National Wilderness Preservation System #420
- National Wildlife Refuge System #421

Member $1.50
Non-member $2.00
(each)

ALL SEVEN BOOKLETS
Member $9.00
Non-member $12.00
#455

"Inner city parks are equally as important as wilderness."

—Terry Ow-wing
Sierra Club activist
San Francisco, California

"I've been involved with community work in Chinatown for almost fourteen years, most of it fighting for a new park, which it sorely needs.

"A few years ago, our committee asked the Sierra Club to help with the fight, and with the Club's help, we won. Park construction begins in 1994. I trusted the Sierra Club members I worked with, and so I joined.

"Right now, there's not enough communication between minorities and the environmental movement. I feel I can make a difference in improving that.

"There's only one Earth. We're all in this together. The environmental movement needs to reach out to minorities and make all people feel welcome. Otherwise there's a big piece missing."

WHAT YOU CAN DO TO HELP KEEP THE GREAT LAKES GREAT
Member $.25
Non-member $.50
(1990) #614

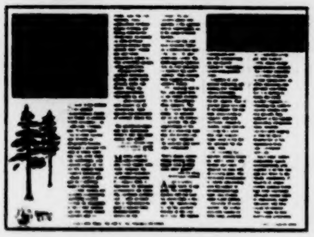
WHAT YOU CAN DO TO HELP PROTECT OUR COASTS FROM OFFSHORE OIL AND GAS DEVELOPMENT
Discover the techniques activists use to halt plans to turn our offshore waters into industrial complexes.
Member $.25
Non-member $.50
(1991) #610

PUBLIC LANDS NEWSLETTER
Sample issue of this activist newsletter.
Member $.25
Non-member $.50
#407

SIERRA CLUB POLICIES
- **Off-Road Vehicles #408**
- **Grazing #409**
- **Public Lands User Fees #410**
- **Archaeological Sites #411**
- **Wildfire Management #412**
- **Wilderness Management #413**
- **Coal Mining #414**
- **Agriculture #603**
- **Offshore Oil & Gas #611**
- **Water #612**
- **Wetlands #613**

Member $.25
Non-member $.50
(each)

ANCIENT FORESTS: What the Timber Barons Say and Why They're Wrong



Sierra Club refutes the arguments for business as usual in our nation's ancient forests.
Member: $.25
Non-member $.50
(1990) #429

VICIOUS CYCLES: Mountain Bikes on Hiking Trails

by Dennis Coello.
When off-road bicyclists and wilderness advocates collide.
Reprinted from *SIERRA*.
Member $.50
Non-member $1.00
(1990) #406

📖 THE BEST OF EDWARD ABBEY

Edited by the late Edward Abbey.
One of our most popular and irreverent nature authors selects 31 of his favorite pieces.
Paper, 383 pages
Member $9.85
Non-member $10.95
(1984) #423

ALASKA REPORT

Sample issue of this activist newsletter.
Member $.25
Non-member $.50
#432

TRUE OR FALSE: Technology is neutral?

False, according to Jerry Mander, author of *IN THE ABSENCE OF THE SACRED.* (See page 25.) Following are three of his "Ten Recommended Attitudes About Technology":

- ◆ Since most of what we are told about new technology comes from its proponents, be deeply skeptical of all claims.
- ◆ Assume all technology "guilty until proven innocent."
- ◆ Eschew the idea that technology is neutral or "value-free." Every technology has *inherent and identifiable* social, political, and environmental consequences.

Swamps, bogs, marshes, sloughs — America's wetlands rank among our most vital natural resources. They purify our drinking water, save our homes from floods, and protect our coasts from erosion. They provide critical habitat for a vast diversity of plants and wildlife — including endangered species — and recreation for countless outdoor enthusiasts.

From AMERICA'S WETLANDS: WHY THEY'RE EVERYBODY'S BUSINESS

BEST COPY AVAILABLE

Every day, the Earth loses another species.

That's what scientists used to believe. Now, they consider this estimate to be far too conservative. With the demise of each species, we lose part of the Earth's biological diversity.

WILDLIFE NEEDS YOU
Steps kids can take to protect wildlife.
Member $1.00
Non-member $2.00
(1983) #630

HOW TO BE A WILDLIFE ACTIVIST
Member $.25
Non-member $.50
(1988) #631

HOW TO BE A WILDLIFE REFUGE ADVOCATE
Wildlife refuges are created as havens for wildlife. But it takes people working together to keep these areas protected.
Member $.25
Non-member $.50
(1988) #632

WILDLIFE ORGANIZATIONS
Names and addresses.
Member $.25
Non-member $.50
#633

Endangered Species and Their Habitats

See back page.

IN THE HEAT OF THE HUNT
by Margaret Knox.
A look at sport hunting. All sides in the conflict take their best shots. Reprinted from *SIERRA*.
Member $1.00
Non-member $2.00
(1991) #647

SIERRA CLUB POLICIES
- Feral Animals #634
- Wildlife #635

Member $.25
Non-member $.50
(each)

🕮 **CALIFORNIA'S WILD HERITAGE: Threatened and Endangered Animals in the Golden State**

by Peter Steinhart.
A survey of some 100 endangered species in California that activists and government agencies are trying to save. A blend of outstanding photographs and informative essays.
Paper, 108 pages
Member $11.95
Non-member $12.95
(1990) #644

Complete the order form on the next page, including the item number, quantity, title, price (member or non-member) and total cost for each publication you are ordering.

If you are a Sierra Club member (or if you are joining today using the membership form on page 29), you are entitled to pay the member price.

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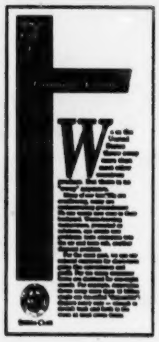
  P.O. Box 7959
  San Francisco, CA 94120-7959
- **Remember to write a separate check for membership if you are joining today.**
- **Please allow 4 to 6 weeks for delivery.**

For office use only

SK

"Waste isn't waste until it's wasted."
—Dan Knapp
Urban Ore
Berkeley, California

WHAT YOU CAN DO TO HELP SOLVE THE GARBAGE CRISIS



Every day, at home, at work, while shopping, you can help reduce your contribution to the solid waste stream.
Member $.25
Non-member $.50
(1990) #601

PUTTING A LID ON WASTE

Toward a Recycling/Reduction Economy
This 12-page booklet outlines the Sierra Club's platform for reducing waste. Included are discussions of the risks of incinerators and the potential of recycling.
Member $1.00
Non-member $2.00
(1992) #323

TOXICS COVER-UP: There Is No "Away" (Poster)

This 34" x 22" color poster illustrates toxics reduction success stories in industry, agriculture, and on the home front.
REDUCED PRICE WHILE SUPPLIES LAST:
Member and non-member $2.00
(1989) #341

ABCs OF RECYCLED PAPER

Includes list of recycled paper suppliers.
Member $.25
Non-member $.50
(1991) #609

WASTE REDUCTION NEWSLETTER

Sample copy of this quarterly newsletter.
Member $.25
Non-member $.50
#608

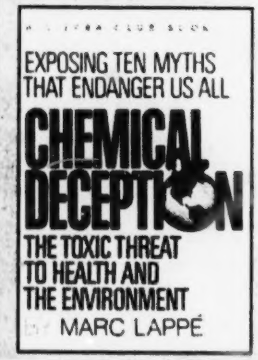
CLEAN AIR: Bring It Back Again (Poster)

This 22" x 34" color poster dramatizes the need for cleaner skies.
REDUCED PRICE WHILE SUPPLIES LAST:
Member and non-member $2.00
(1989) #340

NEW!

🕮 CHEMICAL DECEPTION

The Toxic Threat to Health and the Environment
by Marc Lappé



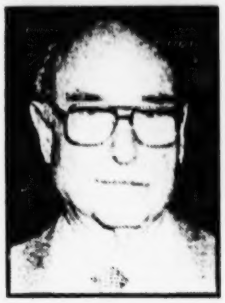
EXPOSING TEN MYTHS THAT ENDANGER US ALL
CHEMICAL DECEPTION
THE TOXIC THREAT TO HEALTH AND THE ENVIRONMENT
MARC LAPPÉ

Health policy expert Lappé exposes ten myths about toxics that endanger us all.
Paper, 360 pages
Member $13.50
Non-member $15.00
(1992) #324

BEST COPY AVAILABLE

❝ Tennessee's environmental regulation is still in the dark ages.❞

—Arthur Smith
Sierra Club activist
Kingsport, Tennessee



"Kingsport, Tennessee is a one-industry town. Most people here either work for the Eastman chemical plant, have friends or family who do, or depend on the patronage of Eastman employees for their business.

"I worked for Eastman for many years. Now that I'm retired, I'm working on them, pushing them to stop polluting our air.

"When their toxic waste incinerator permit came up for renewal last year, we pushed the state to study mortality rates in our town, and packed the public hearings on the new permit.

"The political connections and influence that Eastman has in this town makes things hard, but in February, the state imposed stricter regulations on Eastman.

"It was a small change, but for the first time, we made a dent in the corporate armor. And when you look down the road, you can see that these small changes can add up to a big difference."

SIERRA CLUB POLICIES

- **Acid Rain #305**
- **Toxic Air Pollutants #306**
- **Indoor Air Pollution #307**
- **Alternative Transportation Fuels #308**
- **Hazardous Waste Management #314**
- **High-Level Nuclear Waste #315**
- **Low-Level Nuclear Waste #316**
- **Pest Management #317**
- **Solid Waste #604**

Member $.25
Non-member $.50
(each)

🕮 FOR OUR KIDS' SAKE: How to Protect Your Child Against Pesticides in Food **by Ann Witte Garland. This comprehensive resource explains how extensive the pesticide threat is and what you can do to protect your child.**
Paper, 128 pages
Member $6.25
Non-member $6.95
(1989) #318

Insects, with their short life-cycles, often develop resistance to pesticides in a few generations. Raid, one of the top-selling household pesticides, revised its formula 29 times between 1965 and 1984.

The heat is on!

If you've ever stepped into your car on a sunny day, and been greeted by a blast of hot air, then you've experienced global warming. Just as the car windows allow sunlight in, then "trap" the heat inside, so do the waste gases of industrial activity trap the sun's heat inside the Earth's atmosphere.

Global warming threatens our planet with radical ecological changes — in our children's lifetime.

But it's not too late, if we act now!

GLOBAL WARMING

This factsheet describes the problem of global warming and the Sierra Club's campaign to curb emissions of global warming gases.

Member $.25
Non-member $.50
#501

21 WAYS TO HELP STOP GLOBAL WARMING BY THE 21ST CENTURY

From shopping locally and eating low on the food chain to telling your elected officials to support energy efficiency legislation, this brochure tells how you and your family can help beat the heat.

FREE!
(Limit one per order)
(1990) #503

DOING SOMETHING ABOUT THE WEATHER

by Stephen H. Schneider.

The nation's leading climatologist explores the causes and solutions of global warming.

Member $2.00
Non-member $4.00
(1991) #505

SIERRA CLUB POLICIES

- Global Warming and Ozone Depletion #506
- Electric Utility Rate Structures #507
- Energy and Energy Economics #508
- Energy Conservation and Renewables #509
- Geothermal Energy #510
- Nuclear Power #511
- Decommissioning Nuclear Reactors #512
- Onshore Oil & Gas #513
- Transportation #605
- Urban Environment #606
- Energy Facilities Siting #520
- Environmental Security #521

Member $.25
Non-member $.50
(each)

> "Never doubt that a small group of thoughtful, committed citizens can change the world. Indeed, it is the only thing that ever has."
>
> —Margaret Mead

The natural world knows no national boundaries.

Wild rivers don't stop at the border to show their passports, nor do clouds of radioactive steam. The Sierra Club's International program focuses on problems that no nation or organization can solve alone, including deforestation, pollution, and endangered species.

WHAT YOU CAN DO TO HELP SAVE THE TROPICAL RAIN FORESTS
Member $.50
Non-member $1.00
(1990) #532

SAVING RAIN FORESTS BY LABELING WOOD
How a U.S. tropical wood labeling law can help save the rain forests.
Member $.25
Non-member $.50
(1991) #543

TROPICAL RAIN FORESTS:
A Vanishing Treasure
A lush 16-page booklet with 35 color photographs.
REDUCED PRICE WHILE SUPPLIES LAST:
Member $1.00
Non-member $2.00
(1991) #545

Sierra Club books — See page 25

TROPICAL RAIN FORESTS: Gone in Our Lifetime (Poster)
This beautiful 22" x 34" color poster graphically depicts how greed is destroying the world's rain forests.
REDUCED PRICE WHILE SUPPLIES LAST:
Member and non-member $2.00
(1989) #342

THE EXTINCTION CRISIS
The causes of species loss, the importance of biological diversity, and how you can help.
Member $1.00
Non-member $2.00
(1987) #534

🕮 LESSONS OF THE RAIN FOREST
Edited by Suzanne Head and Robert Heinzman.

Anthology of essays by leading authorities fully examining examining the issues surrounding tropical deforestation.
Paper, 256 pages
Member $13.45
Non-member $14.95
(1990) #540

NEW!

SAVE THREE LIVES
A Plan for Famine Prevention
by Robert Rodale.

This breakthrough book — the last by the late Robert Rodale — shows why traditional Third World farming methods may be superior to Western innovations.

Cloth, 253 pages
Member $18.00
Non-member $20.00
(1992) #546

SIERRA CLUB POLICIES

- Rain Forests #538
- Antarctica #535
- Nuclear Exports #536
- Nuclear Weapons #537

Member $.25
Non-member $.50
(each)

Ten nations with largest populations: (in millions)

1. China 1,130.0
2. India 844.4
3. United States 248.7
4. Indonesia 191.2
5. Brazil 153.7
6. Russia 147.4
7. Japan 123.7
8. Nigeria 118.8
9. Bangladesh 117.9
10. Pakistan 113.1

World population increases by one quarter of a million people every day. That's like adding a country the size of Mexico to the world every year.

5.3 billion and counting...

Achieving world population stabilization is crucial to our success in tackling other environmental problems.

WHAT YOU CAN DO TO HELP STABILIZE WORLD POPULATION
Member $.25
Non-member $.50
(1991) #620

SIERRA CLUB POLICY
- Population #621

Member $.25
Non-member $.50

DEFUSING THE POPULATION BOMB

Defusing the Population Bomb

SIERRA CLUB

This factsheet describes how human population growth contributes to virtually all global environmental problems.
Member $.25
Non-member $.50
(1991) #623

POPULATION REPORT
Sample copy of this activist newsletter.
Member $.25
Non-member $.50
#622

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22 Exploring the Natural World

> "Climb the mountains and get their good tidings."
> — John Muir

Ever since John Muir inspired the first Club outing in 1901, the Sierra Club has believed that first-hand exposure to wilderness is the best way to learn about and gain appreciation for wild places.

The Sierra Club's National Outings program organizes 300 trips to every region of the United States, including 50 to foreign countries. Outings are for Club members of all ages and interests, for all levels of experience and physical stamina. There are outings for families with toddlers, strenuous hikes for backpacking enthusiasts, bike trips, cross-country ski adventures, and more.

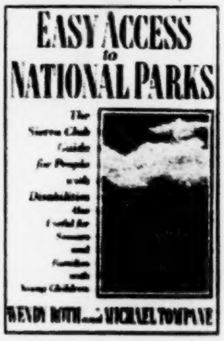
SIERRA CLUB INNER CITY OUTINGS
A brochure describing Sierra Club's program of wilderness adventures for people who wouldn't otherwise have them, including urban youth, the elderly, and the disabled. This program is active in 29 U.S. cities.
FREE!
#702

SIERRA CLUB OUTINGS CATALOG
Member and non-member $2.00
#701

SIERRA CLUB LODGES
List of lodges and huts in California managed by the Sierra Club.
Member $.25
Non-member $.50
#711

NEW!

📖 EASY ACCESS TO NATIONAL PARKS
The Sierra Club Guide for People with Disabilities

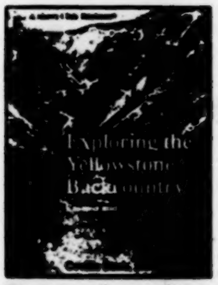


by Wendy Roth and Michael Tompane. This unique guidebook enables visitors with physical limitations (including seniors and families with young children) to enjoy natural areas in all our national parks.
Paper, 404 pages
Member $14.40
Non-member $16.00
(1992) #716

For a complete list of Sierra Club books, order a free *MAIL ORDER SERVICE GUIDE*
See page 25.

NEW!

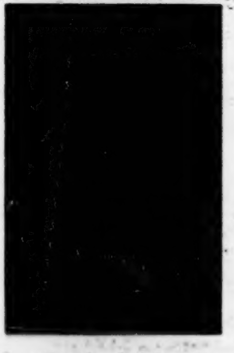
🕮 EXPLORING THE YELLOWSTONE BACKCOUNTRY



Revised and updated by Orville E. Bach, Jr. This popular guide to Yellowstone's hiking trails has been fully updated. Includes sections on canoeing, bicycling, and cross-country skiing.
Paper, 276 pages
Member $14.40
Non-member $16.00
(1992) #717

NEW!

🕮 ADVENTURING IN BRITISH COLUMBIA



by Isabel Nanton and Mary Simpson.
A comprehensive guide to British Columbia, which features vast tracts of wilderness and a wealth of outdoor recreation opportunities.
Paper, 365 pages
Member $13.50
Non-member $15.00
(1992) #718

🕮 A SIERRA CLUB NATURALIST'S GUIDE TO THE DESERTS OF THE SOUTHWEST
by Peggy Larson and Lane Larson.
Paper, 286 pages
Member $8.95
Non-member $9.95
(1977) #708

🕮 A SIERRA CLUB NATURALIST'S GUIDE TO THE MIDDLE ATLANTIC COAST: From Cape Hatteras to Cape Cod
by Bill Perry.
Paper, 470 pages
Member $11.75
Non-member $12.95
(1985) #704

🕮 A SIERRA CLUB NATURALIST'S GUIDE TO THE SOUTHERN ROCKIES
by Audrey D. Benedict.
Paper, 512 pages
Member $15.30
Non-member $17.00
(1991) #715

🕮 A SIERRA CLUB NATURALIST'S GUIDE TO THE PACIFIC NORTHWEST
by Stephen Whitney.
Paper, 324 pages
Member $13.45
Non-member $14.95
(1989) #709

🕮 A SIERRA CLUB NATURALIST'S GUIDE TO THE SIERRA NEVADA
by Stephen Whitney.
Paper, 526 pages
Member $13.45
Non-member $14.95
(1979) #710

Sierra Club: To explore, enjoy and protect the Earth.

SIERRA CLUB HISTORY: 1892-1960
A brief history of the world's preeminent grassroots environmental organization.
Member $1.00
Non-member $2.00
(1977) #801

SIERRA CLUB ORGANIZATIONAL SUMMARY
Member $.25
Non-member $.50
#803

SIERRA CLUB ANNUAL REPORT
Member $2.50
Non-member $5.00
#805

SIERRA CLUB POLICIES

Should wildfires burn unchecked in national parks?

Is incineration of hazardous waste safe?

What can be done to save the rain forests?

Find out by reading Sierra Club policy statements. Each 2-4 page policy is drafted by Club activists and adopted by the Board of Directors.

Individual policy statements are listed throughout the SOURCEBOOK.

Get a complete set of all 39 published policies:
Member $6.50.
Non-member $13.00
#309

SIERRA CLUB HISTORY OF ACCOMPLISHMENTS
A year-by-year chronology of the battles Sierra Club has waged to protect the environment.
Member $.25
Non-member $.50
#802

SIERRA CLUB FINANCIAL REPORT
Member $.25
Non-member $.50
#804

SIERRA
As a member, you receive this award-winning magazine. Additional copies are available.
Member $2.25
Non-member $2.50
#807

SIERRA CLUB PERIODICALS LIST
A list of Club activist periodicals.
FREE!
(Limit one per order)
#820

SIERRA CLUB CENTENNIAL PHOTO ALBUM
A brochure describing historic photographs available for sale from the Colby Library. Photographers include Ansel Adams, Joseph LeConte, Edward Taylor Parsons, and Cedric Wright.
$1.00 (Available only to members.)
(1991)
#837

Reading, Writing, and Protecting the Earth

Many people who have never seen Half Dome or stood at the foot of a redwood have come to know and appreciate nature and the Sierra Club through Sierra Club Books.

MAIL ORDER SERVICE GUIDE
A complete list of Sierra Club books, calendars, and logo items.
FREE! (Limit one per order)
#821

📖 REWEAVING THE WORLD
The Emergence of Ecofeminism
Edited by Irene Diamond and Gloria Orenstein.
The coming together of the ecology, feminist, and women's spirituality movements.
Paper, 320 pages
Member $13.50
Non-member $15.00
(1990) #750

📖 WELL BODY, WELL EARTH:
The Sierra Club Environmental Health Sourcebook
by Mike Samuels, M.D., and Hal Zina Bennett.
A guide for achieving better health in an unhealthy world. Includes a daily program for preventive healthcare.
Paper, 274 pages
Member $11.95
Non-member $12.95
(1983) #215

NEW!

📖 IN THE ABSENCE OF THE SACRED
The Failure of Technology and the Survival of the Indian Nation

by Jerry Mander.
An explosive critique of the largely negative impact of technology on society with an emphasis on its effect on indigenous peoples. By the best-selling author of *Four Arguments for the Elimination of Television.*
Paper, 446 pages
Member $12.60
Non-member $14.00
(1991) #751

For Children

📖 SIERRA CLUB RAIN FOREST THEATER
With this pop-out puppet theater — featuring a 3-D stage with full-color scenery and press-out characters — children learn why the rain forests are essential to Earth's ecology and how human activity is destroying acres of these forests every day.
Member $17.95
Non-member $19.95
(1992) #752

The [illegible] includes [illegible]

26 Sierra Club Chapters

Act locally! Join the Sierra Club in your community.

If you're concerned about state and local environmental issues and want to participate in Sierra Club activities in your area, contact your nearest chapter. Each chapter is involved in conservation work, and sponsors outings and other activities. The chapter can also tell you about smaller, local groups which may have activities closer to your home.

Chapters are listed by state. Addresses and phone numbers are subject to change. If you have trouble reaching your chapter, contact:
Sierra Club
Volunteer Development
730 Polk St.
San Francisco, CA 94109
(415/923-5576)

CANADA

WESTERN CANADA*
620 View St., #314
Victoria, BC
Canada V8W 1J6
(604/386-5255)

ONTARIO (E. CANADA)*
517 College St., Ste. 303
Toronto, Ontario,
Canada, M6G 4A2
(416/960-9606)

UNITED STATES

ALABAMA
P.O. Box 55591
Birmingham, AL 35255
(205/933-9269)

ALASKA
241 E. 5th Ave., Ste. 205
Anchorage, AK 99501
(907/276-8768)

ARIZONA
516 E. Portland St.
Phoenix, AZ 85004-1843
(602/253-8633)

ARKANSAS
c/o Wilma Longo
P.O. Box 193067
Little Rock, AR 72219
(501/562-4127)

CALIFORNIA

Angeles*
3345 Wilshire Blvd.,
Ste. 508
Los Angeles, CA 90010
(213/387-4287)

Kern-Kaweah
P.O. Box 3357
Bakersfield, CA 93385
(805/822-4371)

Loma Prieta*
2448 Watson Ct.
Palo Alto, CA 94303
(415/494-9901)

Los Padres
c/o Tim Frank
467 Cole Pl.
Goleta, CA 93117
(805/967-8941)

Mother Lode*
923 12th St., 2nd Floor
Sacramento, CA 95814
(916/557-1108)

Redwood*
2200 County Center Dr.,
Ste. C
Santa Rosa, CA 95402
(707/544-7651)

San Diego*
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San Diego, CA 92104
(619/299-1743)

San Francisco Bay*
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Oakland, CA 94618
(510/653-6127)

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Ave., Ste. 130
San Bernardino, CA 92401
(714/381-5015)

* indicates walk-in, staffed office

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San Luis Obispo,
CA 93406
(805/772-5362)

Tehipite
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Fresno, CA 93755
(209/233-1820)

Ventana
P.O. 5667
Carmel, CA 93921
(408/624-8032)

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Denver, CO 80203-3518
(303/861-8819)

CONNECTICUT
118 Oak St.
Hartford, CT 06106
(203/527-9788)

DELAWARE
c/o Jeanie Stewart
7 Ferris Court
New Castle, DE 19720
(302/328-4123)

DISTRICT OF COLUMBIA
c/o Cathy Olson
19-J Richmar Rd.
Owings Mills, MD
21117-1917
(410/581-0218)

FLORIDA
c/o Alan Donn
1112 Riflecrest Ave.
Valrico, FL 33594
(813/654-4097)

GEORGIA*
1447 Peachtree St., N.E.,
Ste. 305
Atlanta, GA 30309
(404/607-1262)

HAWAII*
212 Merchant St., Rm. 201
Honolulu, HI 96813
(808/538-6616)

IDAHO
c/o Edwina Allen
1408 Joyce St.
Boise, ID 83706
(208/344-4565)

ILLINOIS*
506 S. Wabash, Rm. 505
Chicago, IL 60605
(312/431-0158)

INDIANA*
6140 N. College Ave.
Indianapolis, IN 46220
(317/253-2687)

IOWA*
Thoreau Center
3500 Kingman Blvd.
Des Moines, IA 50311
(515/277-8868)

KANSAS
c/o Bill Cather
2935 S. Seneca
Wichita, KS 67217
(316/522-4749)

KENTUCKY
c/o Walter Mastropaolo
7103 Branden Dr.
Georgetown, IN 47122
(812/923-7286)

LOUISIANA
P.O. Box 19469
New Orleans, LA
70179-0469
(504/482-9566)

MAINE*
3 Joy St.
Boston, MA 02108
(617/227-5339)

MARYLAND
c/o Cathy Olson
19-J Richmar Rd.
Owings Mills, MD
21117-1917
(410/581-0218)

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3 Joy St.
Boston, MA 02108
(617/227-5339)

MICHIGAN*
115 W. Allegan, Ste. 10B
Lansing, MI 48933
(517/484-2372)

MINNESOTA*
1313 Fifth St., S.E.,
Rm. 323
Minneapolis, MN 55414
(612/379-3853)

MISSISSIPPI
P.O. Box 4335
Jackson, MS 39296-4335
(601/388-2889)

MISSOURI
1005 A S. Big Bend Blvd.
St. Louis, MO 63117
(314/645-1019)

28 Sierra Club Chapters

MONTANA
Box 21196
Billings, MT 59104-1196
(406/248-5454)

NEBRASKA
c/o Bob Warrick
Rte. 2, Box 11
Meadow Grove, NE 68572
(402/634-2361)

NEVADA
P.O. Box 8096
Reno, NV 89507
(702/323-3162)

NEW HAMPSHIRE*
3 Joy St.
Boston, MA 02108
(617/227-5339)

NEW JERSEY*
57 Mountain Ave.
Princeton, NJ 08540
(609/924-3141)

NEW MEXICO
c/o Gwen Wardwell
945 Camino de Chelly
Santa Fe, NM 87501
(505/438-3060)

NEW YORK*
353 Hamilton St.
Albany, NY 12210
(518/426-9144)

NORTH CAROLINA
c/o Bibb Edwards
126 Vine St.
Statesville, NC 28677
(704/873-3757)

NORTH DAKOTA
P.O. Box 294
Surrey, ND 58785
(701/839-2202)

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145 N. High St.
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(614/461-0734)

OKLAHOMA
c/o Mark Arnett
2705 Blue Quail Pass
Edmond, OK 73013
(405/341-9289)

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Blvd.
Portland, OR 97214
(503/238-0442)

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Harrisburg, PA 17108
(717/232-0101)

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